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Office of
Information
Resources
Management

May 1984

USDA Long-Range IRM Plan

FY 1984 - FY 1988

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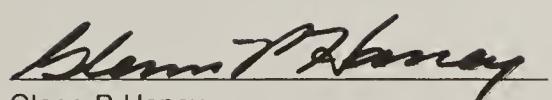
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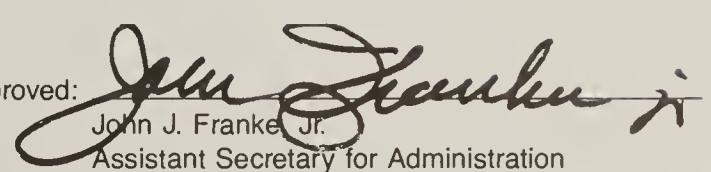
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Prepared by the
Office of Information Resources Management
for the
Assistant Secretary for Administration
United States Department of Agriculture
May 1984

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Acknowledgements

The Office of Information Resources Management (OIRM) wishes to acknowledge the contributions of the thirty-three USDA agencies and staff offices that participated in the Departmental IRM planning process in FY 83. Without their individual and collective efforts, and their resulting agency long-range IRM plans, there could have been no USDA Long-Range IRM Plan for FY 84 - 88. Our appreciation to:

Agricultural Cooperative Service (ACS);
Agricultural Marketing Service (AMS);
Agricultural Research Service (ARS);
Agricultural Stabilization and Conservation Service (ASCS);
Animal and Plant Health Inspection Service (APHIS);
Cooperative State Research Service (CSRS);
Economic Management Staff (EMS);
Economic Research Service (ERS);
Extension Service (ES);
Farmers Home Administration (FmHA);
Federal Crop Insurance Corporation (FCIC);
Federal Grain Inspection Service (FGIS);
Food and Nutrition Service (FNS);
Food Safety and Inspection Service (FSIS);
Foreign Agriculture Service (FAS);
Forest Service (FS);
Human Nutrition Information Service (HNIS);
National Agricultural Library (NAL);
Office of Budget and Program Analysis (OBPA);
Office of Equal Opportunity (OEO);
Office of Finance and Management (OFM)
and National Finance Center (NFC);
Office of Governmental and Public Affairs (OGPA);
Office of Information Resources Management (OIRM);
Office of Inspector General (OIG);
Office of International Cooperation and Development (OICD);
Office of Operations (OO);
Office of Personnel (OP);
Office of Small and Disadvantaged Business Utilization (OSDBU);
Office of Transportation (OT);
Packers and Stockyard Administration (PSA);
Rural Electrification Administration (REA);
Soil Conservation Service (SCS);
Statistical Reporting Service (SRS).

OIRM also wishes to acknowledge the assistance provided by the Federal Simulation Center in summarizing agency plans.

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EXECUTIVE SUMMARY

This USDA Long-Range IRM Plan is a first for the Department of Agriculture. Although, in the mid 1970's, USDA ADP Management Plans were developed, these earlier efforts were not supported by a formalized, Departmentwide planning process that would involve all of the Department's agencies and staff offices in coordinated IRM planning. Such a process was designed in the FY 82 time frame by OIRM and first put into operation during FY 83. This USDA plan is the culmination of the FY 83 planning cycle. Its purpose is to provide a Departmental perspective of the planning year; to highlight and summarize the complete set of agency plans for the five year period, FY 84-88; and to record the set of Departmental planning components that were used to guide and coordinate planning Departmentwide.

The fundamental premise upon which the USDA IRM planning process is based is that long-range, strategic planning can and should be approached systematically, through certain predefined stages, and that each of these stages be reflected and recorded in the documented plan. These stages, as tailored for IRM planning at USDA, are:

- (1) Gaining and understanding of your organization, its mission and functions, its structure, and historical relationship to IRM;
- (2) Making a realistic assessment of the current situation—where you are now, what assets and liabilities you have, and what current problems need attention;
- (3) Evaluating, in the context of your organization, the potential benefits of various uses of state-of-the-art and/or emerging IRM technology;
- (4) Making a prognosis of the changes in your environment and, thus, changes in IRM requirements of your organization over the next five years;
- (5) Based on insights gained, defining the planning assumptions, determining the general direction for the organization (goals), and choosing the most promising routes (strategies);
- (6) Defining, in specific terms, the major accomplishments (objectives) your organization plans to achieve, the major milestones that will

mark your progress, and the resources required to get the job done;

- (7) Writing it all down to produce the organization's IRM plan.

One of the USDA planning organizations recently summarized this approach quite simply: ". . .when completed . . . the Plan tells . . . where the [organization] has been, where it is now, where it believes it should be going, and how it would get there."

Overview of the USDA Plan For FY 84-88

The sections in this Departmental plan parallel the first six stages of planning described above. By virtue of completion of this plan, and the thirty-three agency plans already completed, the seventh stage will have been completed for the entire USDA.

Section 1 provides background information about the Department, its new IRM planning process, and the family of plans it generates. Historical highlights of the evolution of IRM at USDA, from the decade of the '50's to the early '80's, set the stage for the rest of the plan. The Department's history shows it to be progressive, innovative, and rich in IRM experience. In many respects, particularly in its early recognition of centralized management and resource sharing concepts, and its sometimes hesitant willingness to make room for new technologies, the USDA has been on the cutting edge in the IRM arena. It is clear from the recent IRM management strategies it has employed, particularly with the Departmentwide thrust in long-range IRM planning, that USDA intends to stay there.

Section 2 provides a current assessment of the USDA IRM situation from many perspectives. The first is from the vantage point of OIRM, as the IRM oversight office and the first to review the entire set of agency plans. The situation within the Department is clear; USDA is undergoing a major transition, moving in an evolutionary, not revolutionary, fashion to a distributed processing environment. While there is a wide disparity between the stages of evolution in the various USDA agencies, little by little, piece by piece, even the smaller organizations plan to acquire the building blocks that go to make up such an environment. The larger and more mature agencies, in terms of ADP and telecommunications, are more advanced and

planning to move very rapidly. This section examines, in light of the transition in progress, some of the more important technical and managerial implications on IRM in USDA. It cites the "management of change" as a critical consideration, as the employees in the Department and the work that they do are impacted by changes brought by use of new technologies.

The second major part of this assessment is provided by the USDA agencies, themselves. Excerpts from the agency plans highlight the significant issues that helped to shape the plans and provide insights into the USDA agencies that made them. The rich variety of the functions and missions of these agencies is strikingly apparent. Although each agency writes from the viewpoint of its own program functions and unique role in the Department, many identify the same issues and face common problems: the need to improve their information management and handling capabilities, whether programmatic or administrative; the desire to improve productivity in all aspects of agency operations; and, for many, their intentions to move to an agencywide distributed processing environment. Most of the proposed agency solutions involve the obvious—new automated IRM tools—but some are based on better management techniques and streamlined manual systems.

Section 3 deals with current trends in IRM technologies, first from an industrywide perspective. Then, the interest and planned use of IRM technologies by USDA agencies is summarized collectively and tabulated on an individual agency basis.

Agency requirements are varied, but they fall into one or more of three basic categories: administrative operations; program/mission-specific applications; and intra- and/or inter-agency operations. The combined set of tools extracted from agencies plans run the gamut from automated graphics to video conferencing. The more prevalent involve small-scale computers, local and long-haul communications, and agency automated administrative systems.

Section 4 considers a future outlook for IRM in the Department in three different ways:

- Some probable changes in the Department and their impact on IRM;
- The changes that would be introduced, year by year, by implementation of agency plans for FY 84 - 88;

- Three scenarios that depict different paths to the future at USDA.

Section 5 records the Department's FY 83 planning framework—assumptions, goals, and strategies—that was distributed as part of the Department's planning guidance and that was used by agencies in defining their corresponding set of planning components. The analysis of the relationship between Department and agency frameworks clearly shows the consistency and cohesiveness that was the intent of the planning process.

Section 6 states each of the Departmental objectives and lists, by subject matter, all of the agency objectives drawn from the agency plans. Agency objectives, themselves, are found in individual agency long-range IRM plans. In all, over 300 agency objectives were defined.

A final part of this section presents the Departmental objectives in their fully-defined form. For most agencies—other than the ones held responsible for translating bare objective statements (published in the FY 83 planning guidance) into full blown objectives—this will be their first opportunity to see these Departmental objectives in expanded form. The original list of sixteen has been reduced somewhat for the following reasons: some, such as D-8 and D-9 were combined into one D-8; one, involving the establishment of an Information Technology Center, was completed in FY 83; one or two others were combined for functional reasons.

Section 7 presents financial information drawn from two sources: the OMB A-11, Exhibit 43A, for Budget Year 85, and the agency long-range IRM plans. Comparisons are shown for: the Department of Agriculture with the other non-DOD agencies; the agencies within USDA; and the resource requirements of the long-range IRM plans, themselves.

While most agencies estimated resource requirements for all five years of the plan, some did not. Some also indicated that estimates for the outyears, FY 86 - 88, were not complete. No attempt, therefore, is made to show trends over the five years. Instead, the agency objectives of substantial size, based on staff and other costs, are listed; and total resource requirements, staff years and other costs, are given for the five year period.

Conclusions

By virtue of having completed the first (FY 83) planning cycle, and having produced a complete set of long-range IRM plans, the USDA has clearly demonstrated not only its willingness, but also its ability, to successfully implement long-range IRM planning on a coordinated, Departmentwide basis.

To produce the complete family of long-range IRM plans was a substantial undertaking by the Department. Because this was the first year, and plans had to be formulated essentially from ground zero, development of individual plans required a major level of effort for each of the 33 planning organizations. Each subsequent cycle should be easier than the last, as the Department and its agencies update their respective plans instead of having to start from the beginning.

Not all of the plans are perfect this year; some are not as clear and specific as they could be, and a few are incomplete. Nevertheless this first set of plans far exceeds, in quantity and quality, the Department's expectations. Long-range IRM planning, as implemented in the USDA, is a dynamic process; even though the first planning cycle is just now coming to closure, the second, FY 84 cycle is well underway. The Department is confident that as agencies continue to sharpen and fine tune their internal planning processes, their plans will come into sharper focus, too.

Collectively, the Department's long-range plans for FY 84-88 are ambitious and technically challenging. Probably not all the objectives or their milestones will be met as scheduled. But if, in the long run, a significant part of the plans are carried out, the USDA and its IRM program will have accomplished much "in the process."





1. Introduction and Background

- IRM in USDA

In 1982 the newly formed Office of Information Resources Management (OIRM), the Department's Information Resources Management (IRM) oversight office, undertook the development of a long-range, strategic IRM planning process to be implemented Departmentwide. The Department initiated its formalized IRM planning process the following year. This USDA plan is one of many long-range IRM plans subsequently produced in the Department during the first planning cycle in FY 83.

Section 1.1 gives an overview of the process and the plans it generates; provides background information on the USDA organization and IRM program as they relate to long-range IRM planning; and describes, in brief, the planning methodology employed.

Section 1.2 provides a brief recounting of the Department's IRM history to set the stage for the rest of this Departmental long-range IRM plan for the FY 84 - FY 88 time frame.

1.1 Departmental Long-Range IRM Planning.

USDA's long-range IRM planning is a formalized, cyclic process; it is managed and coordinated at the Departmental level by OIRM with Departmentwide participation by all USDA agencies and staff offices. (For purposes of long-range IRM planning, and in the rest of this document, both types of organizations are referred to as "agencies" except where there is some need to distinguish between them.) Under Departmental guidance, agencies manage their own internal planning process so that agency IRM plans can be designed to support program/mission requirements.

Each year the planning process produces a two-tiered family of five-year plans: the agency long-range IRM plans and the USDA Long-Range IRM Plan. All of these plans are updated annually so they remain current with changing technology and program requirements. With each update cycle the five year period covered by the plans moves forward one year in time. These are strategic plans whose primary focus is on significant initiatives, innovations, changes, and improvements in IRM within each planning organization. On-going, operational activities are not necessarily included in the strategic plan unless they are to undergo changes, themselves. But on-going or not, all major IRM efforts should be considered

candidates for potential improvements and, thus, should be included in the plan.

USDA Long-Range IRM Plan for FY 84-88. This document is the first published annual USDA long-range IRM plan. Its publication marks the completion of the FY 83 planning cycle, the first such cycle to be implemented by the Department. This plan combines information from the USDA FY 83 guidance package (such as the set of Departmental planning components that establish Departmental IRM direction) with information drawn from agency plans produced in the FY 83 planning cycle.

The USDA plan is designed to give a Departmental perspective and overview of long-range IRM planning; to summarize and highlight, collectively, the set of agency plans; and to document Departmental objectives that are underway. Thus, it is a supplement to, and not a replacement for, the individual agency plans. In summary, this USDA plan contains (in addition to this introduction):

- An historical perspective of the use of IRM technology by the Department and its agencies (section 1.2);
- An assessment of the current IRM situation (section 2);
- An assessment of the potential impact of emerging IRM technology (section 3);
- A "future outlook" projecting some probable changes in the environment at USDA over the next five years, especially as suggested by the collection of agency long-range IRM plans (section 4);
- IRM planning components (sections 5 and 6);
- Statistics drawn from the Departmental and agency plans, as well as the OMB A-11 Information Technology Systems Reports for Budget Year (BY) 85 (section 7).

Where appropriate, each of these sections gives a Departmental perspective first, then highlights the collection of agency plans.

Agency plans produced in this FY 83 cycle were, by Departmental design, based on an abbreviated outline.

Because the first cycle of any long-range planning effort is, at best, difficult, OIRM held content requirements for agency plans to a minimum. These were:

- Management summary;
- Background information;
- Agency assessment of their current IRM situation;
- Agency assessment of emerging IRM technology;
- Agency IRM goals;
- Agency IRM objectives.

In subsequent cycles, agency plans will be expanded to more nearly parallel, in structure, the USDA plan.

IRM Planning Tailored to the USDA Organization

The organizational structure of USDA — its size, geographical distribution, program and administrative management, and internal organizational relationships — influenced the design of the Departmentwide long-range IRM planning process.

USDA has more than 100,000 employees in more than 15,000 locations throughout the nation, including Alaska, Hawaii, and Puerto Rico. It is responsible for many broad missions encompassing more than 300 programs administered by over 30 agencies. These agencies are small (10 employees) to very large (36,000 employees) organizations, some with thousands of field offices at the county, state and regional levels. Each is headquartered in the Washington, D.C. area. Over 12,000 employees are located in the Washington, D.C. Metropolitan area, with the balance (98,000) distributed throughout the nation.

Organizationally, USDA agencies are combined in loosely-coupled, functionally related groups under one of several Assistant and/or Under Secretaries. But it is the individual agencies that are directly and separately responsible for the mission-oriented, widely-diversified programs that collectively constitute the principal work of the Department.

A few examples of the diverse programs for which USDA is responsible are:

- Soil and water conservation;
- Forest management and timber sales;
- Statistical reporting for agricultural commodities;
- Loan programs for the U.S. rural community;
- Scientific research in agricultural technology;
- Federal grain and food safety inspection;
- Animal and plant health inspection services;
- Rural electrification.

A group of agencies (staff offices) under the Assistant Secretary for Administration is responsible for the Department's administrative programs and for supporting the rest of the Department in administrative matters.

Woven throughout this complex Department, with its many diverse functions and responsibilities, IRM is a common thread. The effectiveness of the Department's programs is more and more heavily dependent upon maintaining high quality, effective, and responsive IRM support. And yet, the Department's IRM staff resources and support requirements are diffused throughout USDA, some thousands of miles removed from headquarters.

In the context of this USDA organizational and geographic structure, the challenge in designing a USDA long-range IRM planning process was: to bring cohesion and common direction to all USDA agencies planning for IRM; and to give individual agencies enough flexibility to adequately plan for their own IRM requirements. Some basic decisions made early in the design process were:

- To achieve the best IRM support throughout USDA, each agency must develop IRM plans to support its own program/mission requirements;
- The maximum amount of time possible must be allowed for agency planning to accommodate large agencies with widespread field office structures;

- Agency planning must be synchronized with the Department's budgetary process;
- OIRM would coordinate the Departmentwide planning process, provide "top-down" Departmental guidance to agencies, and produce a Departmental plan at the end of each planning cycle.

Thus, the functional organization of the Department dictated the two levels of IRM planning, Departmental and agency. The two-tiered family of plans was a natural consequence.

The Department's IRM Program. The Department's IRM program began, officially, in 1981. Its primary impetus was the Paperwork Reduction Act of 1980 (PL96-511). But, in this same time frame, the General Accounting Office recommended that USDA:

- Develop an information resources management program for the Department and its agencies;
- Develop a comprehensive long-range planning process for managing its information resources.

Both of these recommendations have been acted upon by the Department and have evolved, in parallel, since that time. In 1981 the USDA designated the Executive Assistant to the Secretary as the USDA Senior Official for IRM. The Executive Assistant then established an IRM Task Force that defined several projects requiring participation by various agency officials. Subjects ranged from review of the Departmental Information Processing Standards to suggestions for establishing a Departmentwide ADP/word processing hardware inventory.

In January 1982 the Office of Information Resources Management (OIRM) was created, under the Assistant Secretary for Administration. In June 1982, OIRM began its design of the long-range, strategic IRM planning process to be used Departmentwide. In November 1982, the Assistant Secretary for Administration was designated the USDA Senior Official for IRM to carry out the Department's responsibilities under PL96-511; the IRM Task Force was dissolved.

In November 1982, OIRM distributed a preliminary planning guidance package for comment to the heads of all agencies. Comments were incorporated, and

after several internal reviews, the official FY 83 planning guidance was released to agencies in April 1983 to initiate the first agency IRM planning period.

In February 1983, the Assistant Secretary for Administration requested each USDA agency to designate an agency senior IRM official who would be responsible for all agency IRM matters, and for managing agency long-range IRM planning. Two months later all agencies had designated these officials. Approximately four months later, the first set of agency IRM plans was submitted to OIRM; these are the agency plans upon which this USDA plan is based.

Thus, concurrent with the evolution of IRM planning in USDA, an IRM management team evolved that crosses organizational boundaries. This IRM team is headed by the USDA Senior Official for IRM; supported by the Director of OIRM and his management staff; and includes the agency senior IRM officials. As agencies reorganize and begin to structure themselves along IRM lines, more and more IRM managers will become a part of this team.

The USDA IRM Mission. Collectively, and/or individually, the USDA IRM Team is responsible for supporting the Department's IRM program whose broad mission is to "improve the management and utilization of information resources throughout the Department". Two key definitions, and an enumeration of IRM functional responsibilities (drawn from PL96-511) are needed to fully define the scope of this mission.

The key definitions are:

Information resources include all of the data, information, and information facilities, sources, services, staff resources, products, and systems that are useful to an organization in meeting its information requirements. Note that information itself is considered an "information resource."

Information resources management is that aspect of management that deals with the utilization of information and other information resources and is concerned with the acquisition, processing, communication, and retention of information. It employs specific disciplines such as automated data processing, data administration, telecommunications,

office automation, and records and paperwork management; but it extends beyond all of these to include the flow, use, and responsibility for all types of information within the organization.

IRM's functional responsibilities, as drawn from PL 96-511, and personalized to the USDA, include:

- minimizing and controlling the cost to USDA of collecting, processing, maintaining, storing, using, and disseminating information;
- improving availability, timeliness, accuracy, integrity, privacy, security, auditability, shared use, and cost-effectiveness of all information resources;
- ensuring that the IRM technologies are acquired and used by USDA in a manner which improves delivery of services and supports program management.

This USDA IRM program mission is also the mission for USDA long-range IRM planning; it forms the top of the hierarchy of planning components used in the planning process. In this way the IRM program and IRM planning are joined by a common purpose.

The Departmental IRM Planning Cycle. The basic planning cycle is approximately fifteen months or five "quarters" in duration and proceeds in stages:

- *First quarter:* OIRM prepares planning guidance for the current cycle, submits it to the USDA Senior Official for IRM for approval, and distributes it to the USDA agencies;
- *Second and third quarter:* agencies develop their IRM plans; at the end of the third quarter, they submit plans to OIRM along with their suggestions for improving the process;
- *Fourth quarter:* OIRM reviews and evaluates agency plans and suggestions;
- *"Fifth"/First quarter:* OIRM prepares the USDA composite plan for the current cycle and, at the same time, prepares new guidance for the next cycle.

The period from January through June, the second and third quarter of the fiscal year, coincides with the

Department's Program Budget cycle; this is the time period around which the IRM planning cycle is centered.

The cycle just described is "ideal"; i.e., it reflects the optimum timing of the planning stages in the Departmentwide process. In this first (FY 83) cycle, however, because of the importance of gaining Departmentwide understanding, acceptance, and support for this new process, many intra-Departmental reviews were necessary. As a result, the FY 83 cycle was much longer than fifteen months.

An IRM planning process that is not readily adaptable to changing technology and program requirements of the Department, would soon be outmoded. For this reason, the USDA planning process contains a self-improvement and adaptive mechanism linking agencies and the Department in an on-going, cyclic dialogue. Agencies, in the current planning cycle, are asked to submit suggestions to OIRM for improvements to any part of the process or plan formats. OIRM reviews the suggestions, and the agency plans themselves, then incorporates changes into the new guidance for the coming cycle. Other changes brought on by IRM technological and/or policy changes are also incorporated into the Departmental guidance documents every cycle; agencies then can revise their plans in response to changes in Departmental and/or agency program requirements. In this way the long-range IRM plans never become obsolete.

The Planning Components. The USDA planning process employs only a few basic components, then uses them at Departmental and agency levels to form a hierarchical network of components that provides cohesion to IRM planning.

From the top of the planning hierarchy down, these components are:

- *The USDA IRM mission* (defined above) establishes a uniform, consistent basis for IRM planning.
- *Goal:* a broad, general statement of a desired, "ideal" state that the organization will strive to attain. A goal is not quantifiable in terms of specific times nor resource requirements. Though broad and general, each IRM goal is focused on, and directed towards, a particular aspect or strategic area of the broad IRM mission.

- *Planning Assumptions*: the “givens” about the organization’s environment that are perceived to have a potential positive or negative influence over IRM efforts for the time period covered by the plan(s).
- *Goal-related Strategies*: these form a bridge between the “generality” of goals and the “specificity” of objectives (see below). Strategies identify useful approaches to meeting goals and set the stage for objective setting.

These four planning components (above) form a “planning framework” within which all objectives are defined.

- *Objective*: The objective (statement) specifies one or more measurable accomplishments to be achieved by a given (estimated) time in support of a goal. Fully defined, the complete objective includes: background information, a planned approach, major milestones, estimated resources, assignment of responsibility, plus a statement of pertinent constraints, conditions, and/or assumptions.

Objectives are the heart of the strategic plan; they define specific accomplishments, include the dimension of time, and establish organizational commitment of resources. But they do so within the directional framework of the other components. When implemented, they translate the “paper plan” into substantive accomplishments that bring about desired changes. This is the real thrust of strategic planning.

How These Basic Components are Used. A Departmental planning framework (mission, goals, assumptions, strategies) is part of the Departmental guidance distributed to the agencies at the beginning of each agency planning period. Agencies, working within the scope and direction of the Departmental framework, define their own planning framework consistent with the Department's, but tailored to program/mission-oriented requirements.

Agencies may adopt goals from the Departmental set; or they may formulate goals to support both the Department's and the agency program goals. This relationship is the key linkage between Departmental IRM and the program/mission work of the Department; a similar, alternative linkage may be established through agency objectives.

The planning process defines two classes of objectives: Departmental and agency. Regardless of class, USDA agencies are the ones who expand them in detail and implement them. The objectives designated as Departmental have two distinguishing characteristics:

- They have potential impact or are of significant interest Departmentwide;
- They are the only class of objectives that are published in fully-defined form in the USDA plan.

Departmental objectives may have one of two distinct origins. They may be Departmental initiatives that are injected into the planning process; the agency designated as responsible translates the initiative into a fully-defined objective, then implements it. Or objectives may be drawn from agency long-range IRM plans and “elevated” to Departmental status. All Departmental objectives in this issue of the USDA plan originated as Departmental initiatives. Their definition predated the first agency planning period; there were no agency objectives.

Agency IRM objectives are specified by the agency and are designed to support Agency IRM goals which, in turn, support Departmental IRM and Agency program goals. A well-defined set of Agency IRM objectives, when implemented, can assure quality IRM support for the agency.

If all of the USDA agencies, and the Department, maintain and implement an effective set of long-range IRM objectives, linked to goals that are, in turn, linked to the USDA IRM and program missions, then the USDA can be assured of quality IRM support throughout the Department. That is the intent, the “goal”, of USDA long-range IRM planning.

1.2 Historical Perspective of IRM at USDA

USDA, like any other large organization, has been involved in IRM since before the discipline had a name. The Department acquired its first computer in 1956. In the years that followed, more and more computers were acquired, primarily by the larger USDA agencies with workloads and budgets sufficient to justify their acquisitions.

By the early '60's, the Department recognized the need for limiting the growth in the number of computers; it did so by encouraging the sharing of these valuable resources. In 1962, by Secretarial Memo (No. 1509), three computer centers were designated as Departmental Computer Centers (DCC's):

- The Kansas City Computer Center (KCCC);
- The New Orleans Computer Center (NOCC);
- The Washington Computer Center (WCC).

For several years, these centers continued to be managed by the owning agencies, and resource sharing, i.e., providing services to other USDA agencies, was implemented to some extent.

The centralization theme, of which resource sharing was only a part, was expanded upon by the Department when, in 1966, the concept of a centralized management office was adopted. A new organization, the Office of Management Improvement (later to become the Office of Information Systems and, still later, the Office of Automated Data Systems), was established to provide centralized management of ADP, telecommunications, and other IRM functions such as paperwork management. These offices were the predecessors to OIRM.

The underlying motivation for centralized management, from the viewpoint of Departmental administration at the time, was the perceived need to manage and control the cost and acquisition of computers. The need for more computers was directly attributable to the rapid growth in both the number of agencies turning to automation, and the number and size of new computer-based applications.

At the beginning of the 1960's, a handful of USDA agencies operated a few *dozen* applications; by the end of the decade, over half of the agencies had developed and were operating a few *hundred* applications. Consistent with the technology of the times, these were batch and/or remote batch applications. As agencies acquired new, larger, higher powered computers, because their existing computer systems were saturated, the "latent demand" for processing power pushed the workload demands even higher.

In spite of the use of DCC's as shared ADP resources, by the early 1970's the number of agency-owned systems had grown to 43 and, collectively, USDA agencies envisioned acquiring over a hundred large-scale, mainframe computers within a few years. Minicomputers were still in their early evolutionary stages (hardware with little software) and were of little general interest to USDA, although a few were being used by some of the scientific research agencies for laboratory automation. The Department wasn't concerned about them — not then.

In this same time frame, a Departmental survey of projected agency ADP usage revealed that all of the large agencies (e.g., FS, ASCS, FmHA) were planning new automation in support of their programs, as were about 75% of all agencies. Many were, at that time, beginning to consider remote data entry and/or remote access to on-line-data bases, and interactive program development. About one-quarter of the agencies indicated "no interest" in automation of any kind. On the matter of agency versus Departmentally managed computer centers, the consensus was only slightly in favor of the centralized approach.

By 1973, the Department had transferred operational control of the three Departmental Computer Centers to its centralized management office; opened another DCC at Fort Collins, Colorado, the FCCC; and designated the St. Louis Computer Center as Departmental. This was also the year that USDA assigned responsibility for operational control of Departmental data communications to this same centralized management office. By this time, data communications had joined ranks with ADP as a predominant and rapidly growing IRM technology, and it was clear to the Department that management and operational control of ADP and data communications should be centralized in USDA.

It is important to note that before, during, and after this period, when "centralized" management was implemented, Agencies continued to have responsibility for applications development. This aspect of IRM within the Department has not changed over the years. In a Departmentwide software inventory published in this time frame, agencies reported over 800 software applications, most of which were developed "in-house."

The early seventies brought a rapid, industrywide

evolution of large-scale computer systems; concepts such as virtual memory, front-end communications processors, interactive processing from local and/or remote terminals, data base management, multi-processors became off-the-shelf realities. The Department sought to procure modern homogenous computer systems for its DCC's. Although technically sound, the procurement met with disfavor, some of which was attributable to the climate reflected in the Privacy Act of 1974. Over the next five years or so, individual DCC's were modernized, but with a mix of vendors' product lines. Broadband communication lines that had been established to support DCC-to-DCC bulk data transfer, between "like" systems, were of little utility given the "mix" of systems that had evolved.

For several years, then, the Department's concern over proliferation of computers was allayed, and centralized data processing at the DCC's served the Department and its agencies well. Several large management information and linear programming systems were developed and installed on the big machines. Departmental administrative systems soon evolved and were processed at the USDA National Finance Center (NFC). The Department and its agencies took full advantage of the "economies of scale" available on its large-scale computers at the DCC's.

By the late 70's, the "information explosion" had impacted most of the agencies; few were untouched. Demands to handle information — to store it, retrieve it, process it, and disseminate it — increased by orders of magnitude. The paperwork burden, inter- and intra-Departmental, seemed almost intolerable.

Agencies were hard-pressed to improve their procedures for dealing with all of this information so vital to effective support of their mission-oriented programs. Improvements often meant replacing time-consuming manual and second-generation data processing applications and systems with newer, more efficient systems and methods. Conversions and resystemizations were costly, time consuming, and highly skilled labor intensive.

While technological advances and new applications enabled many agencies to cope with increased workloads, some agencies faced serious difficulties. Budget cuts and reduced full-time employee ceilings, in the face of increased demands, stretched their IRM resources very thin. This situation prompted some

agencies to pursue "quick fix" performance improvements (e.g., modifying obsolete applications where complete redesign was in order) leading to temporary solutions, only marginally effective and relatively short-lived.

It was in this same period, the latter part of the '70's, that minicomputers finally matured. They offered general-purpose, multi-user computing power, with software, at extremely attractive prices. USDA agencies began acquiring their own "mini's", and the Department, toward the end of the decade, held a year-long moratorium on acquisition of these small machines so that a Departmental task force could evaluate this new "threat" of proliferation. Based on the outcome of the task force study, the Department resumed its "case by case" handling of technical approval requests for minicomputer acquisitions.

During this same decade, USDA experienced a continuous and steady increase in agency demand for data communications services as more and more remote terminals came on-line to the DCC's. The Department developed a network using AT&T long-lines as the data carrier. Several Departmental terminal requirements contracts for terminals of different levels of intelligence were awarded towards the end of the decade. These contracts made terminals readily available to the Department's agencies at comparatively low cost. As the number of terminals in the Department increased, and more and more agencies went "on line", the demands for data communications service increased at an accelerated rate. The Department's centralized management office began to prepare for the 80's by gathering communications requirements data from USDA agencies and examining alternative methods for meeting the Department's long-range data communications needs.

By the early '80's, the Department had determined its best course for the future was to use data communications services to provide nationwide, *Departmental Network (DEPNET)* services for Departmentwide use; and plans were underway to contract for such services.

About this time, the minicomputer's kid brother, the microcomputer, arrived on the scene bringing "user-friendly" computing to the desk tops of end users. Introduced at an amazingly low price that has fallen

rapidly and steadily since then, the microcomputer offered new cost-effective solutions to word processing, personal computing, and office automation.

Once more the Department had to deal with the "threat" of proliferation. This time by microcomputers. The USDA was faced with a dichotomy: it needed to stem uncontrolled growth of these new small computers while, at the same time, wanted to take full advantage of the benefits they could offer. This time there was no moratorium; the first Departmental microcomputer policy, issued in December 1982, encouraged the "orderly introduction of compatible, cost-effective microcomputer technology within the Department". An expanded policy development was initiated almost immediately because the Department was aware of the need to keep pace with the rapid technological advances of these small computers and the growing interest of potential end users in the Department, paralleling the advances.

Many of the Department's agencies that had been disinterested, heretofore, joined the automation fold through use of word processors. As the machines expanded their capabilities to include or combine data processing, so did these agencies. Early office automation was centered in the Washington, D.C. headquarters; but in late 1981, some of the large agencies (FS, ASCS) began planning, and conducting pilot tests, for the eventual automation of their field offices. These agency plans foreshadowed some of the most sweeping changes in IRM in the Department since automation was introduced.

There were other major forces at work in the Department then. Something needed to be done about the Department's administrative applications at the NFC. Ten years old, or more, they had been designed

for batch and remote batch operations. USDA agencies were calling for distributed input and access to these systems. In March of 1983 the USDA published its Reform '88 action plan. Two of the reform initiatives identified in the plan, 1 and 2, addressed the Department's concerns related to its administrative systems:

- **Reform #1:** Reexamine Departmentwide automated management systems such as those handling payroll, personnel, property, etc., to develop simpler and cheaper processing methods.
- **Reform #2:** Establish a review board to coordinate the development and operation of Departmentwide administrative systems.

The Department's approach to implementing these two reforms had actually solidified by late 1982, along with the other Reform '88 initiatives. Objectives in support of Reform 1, dealing with centralized Departmental systems at the NFC were developed and are incorporated in this plan. For Reform 2, the Department quickly established a Departmental Systems Review Board whose area of responsibility was extended to include all automated systems with Departmental impact.

This brings the Departmental IRM history to an end, in the beginning of FY 1983, at a time when USDA and its agencies were beginning to feel the impact of microtechnology, and to question the extent of its impact on future use of the large-scale systems at the DCC's. While these small, low-cost computers had not yet changed the face of computing at USDA, there seemed little doubt that they were about to!

2. Assessment of Current Situation

-USDA in transition

Long-range, strategic planning requires the planning organization to assess its current situation before planning a future course of action. This means taking stock of its assets and liabilities, perceived future opportunities or risks, and the internal and external forces that may influence the plans or their outcome.

The Departmental perspective (Section 2.1) provides a global overview of the USDA IRM situation from the vantage point of OIRM, the Department's IRM oversight agency.

Each of the USDA agencies included such assessments in their long-range IRM plans. Excerpts from agency plans (Section 2.2) exemplify each agency's view of its own current situation.

2.1 Departmental Perspective

The USDA is currently undergoing a major transition, originating from its IRM efforts and bringing about changes that promise to impact every aspect of the Department's operation. Some of the major forces helping to shape this transition are:

- The abundance of new cost effective technological tools (external);
- Ever-increasing demands for *immediate* access to information (external and internal);
- A scarcity of IRM resources (staff and/or dollars) to handle increasing workloads (external);
- Stronger influence by the central management oversight agencies (e.g., OMB, GSA), as well as by Departmental IRM management (internal and external).

This transition can be characterized by some of the changes taking place within the Department:

- A growing community of end users of small computers, once exclusive to the IRM technical staff, is being populated by Agriculture's scientists, program and administrative managers, and general support staff throughout the Department;
- Offices, large or small, at headquarters or in field locations distributed throughout the nation, are targeted for transition to automated operations;

- Large batch processing applications, agency and Departmental alike, are undergoing or slated for transition to remotely accessible, interactive processes;
- New small-to-medium scale communicating computers are being acquired; those on-hand that were once operated in stand-alone environments are being upgraded to communicating computers;
- Local area networks, communications interfaces to the Departmental DEPNET facilities, and voice/data communications for the Washington, D.C. metropolitan area are targeted for development and/or expansion;
- Departmental Computer Centers are planning to create user-friendly interfaces to the interactive end users; expanding front-end communications to handle increasing interactive traffic; and exploring the feasibility of DCC-to-DCC communications.

Distributed Processing Environment - in the making

These few transitional changes at USDA clearly indicate the Department's current direction. Through an evolutionary process, it is moving toward a distributed processing environment.

This evolution is actually many separate evolutions taking place on an agency-by-agency basis. Each agency is making a transition according to its own time table, program requirements, and ability to do so. As a natural consequence, most of the USDA agencies are at different stages in their evolution. A few agencies are just now using automation for the first time, but some that have used automation for over 20 years have already acquired their equipment base for distributed processing.

To support this new environment, the Department defined three Departmental objectives to facilitate Departmentwide implementation (Reference Section 6.1).

Departmental Objective D-5: Provide a Departmental data communications utility through September, 1991.

Departmental Objective D-11: To establish Departmental strategies, standards and guidelines

for the acquisition and use of end user Computers in USDA's distributed processing environment by October 1984.

Departmental Objective D-15: To develop and implement an Information Center capability at each of the Departmental Computer Centers by FY 1986.

The new electronic environment will offer the USDA opportunities too numerous to mention individually. In summary, the predominant ones are: higher efficiencies in the distribution and accessibility of information, both program and administrative; higher levels of functional integration, intra-agency in early stages, then Departmentwide when the environment is fully evolved.

Similarly, the *risks* are too many to enumerate individually, but the bottom line is a potential for large losses in investments (time, efforts, and dollars) if developmental systems fail.

The rest of this assessment focuses on some of the more important implications of the transition taking place in the Department.

Technical Implications

Systems Compatibility. The well-known bugaboo of "incompatible" systems, as serious as it has been in the past, becomes one of the critical considerations when attempting to establish a distributed processing environment. For the USDA and all of its agencies to discard all computers and acquire a whole new set of compatible ones is impractical, if not impossible, in the foreseeable future.

Instead, USDA intends to seek the maximum compatibility possible, without mass equipment replacement, using certain technical strategies:

- Requiring hardware standardization within each agency as it acquires new microcomputers;
- Using standard communication protocols in DEPNET and other communications networks and/or interfaces;
- Sharing of common (in-house) software; use of proprietary software; and use of on-line Departmental inventories to locate IRM resources;

- Continuing to emphasize use of standard programming languages.

Technical Resources. High on the list of USDA's assets is its large number of technical specialists — over 2800 in the computer and 700 in the communications field. They will need to make a transition, themselves, from the traditional design and development methods and techniques to new ones needed for distributed processing. Tomorrow's applications and their data will be made up of system modules and data bases on several levels of computer systems, from micro to mainframe. Tape-oriented serial batch processing will be a thing of the past.

The Department is committed to retraining its *technical* staff; many agency plans indicate initiation of training programs. Most of these programs fully acknowledge that non-technical, functional managers will also need IRM training, because they will become intimately involved in the system definition process along with technical specialists.

Management Implications

Integrated Management. In the past the decisions governing the design and implementation of an automated system were made by technical managers and specialists in an essentially "closed" environment. The application operating environment was confined, as a rule, to a single host computer. Users were essentially divorced from this whole process, except when (or if) asked to define their "requirements."

Distributed processing applications, in their multi-processor, multi-user environment, will provide a multiplicity of functions to many different end users in all parts of an organization.

A seeming contradiction of terms, *distributed* processing can bring *integrated* functional operations within the organization. But not without an *integrated* team of managers to guide system definition and design. Active participation and informed (computer-literate) decisions by USDA managers — administrative, program, information resources, as well as managers of the end-user community — will be critical to development of these new style automated systems.

Management of Change. When the system

software support for distributed data base management becomes available, industry can supply USDA with *all* of the necessary building blocks for a fully functional distributed processing environment. But these evolutionary building blocks may prove to be either the Department's most valuable assets, or costly liabilities, depending on USDA's ability to evolve with them.

In the past, and continuing now, the evolution of hardware outpaced that of software. Software development was called an "art, not a science." This "art" has led to some costly, even disasterous, software systems failures. This is true of the industry as a whole, not just USDA. Today, the rapid evolution of the many IRM technologies threatens to outpace an organization's ability to assimilate and manage it. The impact of IRM technology is no longer confined to the data processing department; it is felt in every part of the organization.

Within the USDA, as the transition progresses, the arms of distributed processing will reach out into the grass roots USDA organizations throughout the nation and to its overseas outposts, changing the way that tens of thousands of people do their jobs. And people, throughout history, have consistently resisted change. In the transitional years to come, the Department will need to find a way to overcome or mitigate this resistance.

Of all the other aspects of management under the IRM umbrella, the "management of change" may be the most important challenge of all to the Department.

2.2 Agency Perspective

As technological advances continue to reduce the per unit costs of processing and communicating information, the USDA agencies are planning to take advantage of these new economies. Nevertheless, agencies IRM budgets continue to escalate because of the need for:

- Staff to design and maintain application software;
- Telecommunications to connect the increasing numbers of end users;

- IRM training;
- Consulting, design, and implementation contracts.

The demand for ready access to information is felt by all the agencies, large or small, and in all parts of their organizations. Large organizations have countered the demand by introducing stronger, top-level management of their IRM activities, especially to address the management of information. Technical advancements have led many agencies to acquire small end user computers to facilitate automation of data.

Collectively, agencies are pursuing several management strategies aimed at improving use of information resources of all kinds:

- Developing an internal IRM planning process to complement the Departmental process;
- Assessing current automated applications and manual processes;
- Conducting feasibility studies and cost-benefit analyses of alternative approaches to automation;
- Training for IRM management and technical staff;
- Upgrading hardware and software according to analyses above;
- Issuing new directives and procedures for better management controls;
- Expanding the use of office automation combined with data processing;
- Emphasizing the use of shared data within their own agency and, in some cases, with other USDA agencies.

The strategy being pursued by all but the smallest agencies is the planned acquisition of communicating microcomputers that will be linked, via communications, to DCC's and/or other host processors in the Department.

Excerpts from Agency Plans

The passages that follow were extracted from the management summaries of agency plans in order to highlight some of the significant issues that helped to

shape the plans and to provide some insights into the USDA agencies that made them.

Agricultural Cooperative Service. ". . . ACS long-range IRM plans [call for] . . . utilization of automated information processing and telecommunication technologies to improve service delivery and program management. . . . [and] selection of micro-computer equipment and related software/hardware; and the provision of training and training opportunities for staff members of ACS for the new equipment. Many of the selection and procurement activities took place in FY 83, with training activities to begin with FY 84. Monitoring of equipment will occur in FY 84 to assess the impact on the various program areas of the agency."

Agricultural Marketing Service. "There are several important factors and characteristics of AMS's operations and organizational personality that has a very direct and significant impact upon its Information Resources Management and its consolidated plan for the management of those resources in the future. In summary, these factors are: . . . unusually wide diversity of programs and activities . . . users fee funding through voluntary services . . . new corporate enthusiasm for modern technology. . . .

"All of these factors combine to generate a newly active, inquisitive, and challenging agency environment. The diversity of programs and user fee funding place an emphasis on sophisticated analysis of individual system needs and requirements to ensure a proper and cost-effective matching of information resources to agency and program needs. To foster this process, AMS is changing over to an IRM and planning environment to most efficiently harness and deploy its valuable information management resources to its many needs. . . ."

Animal and Plant Health Inspection Service. "Preparation of the APHIS Information Resources Management (IRM) Plan will require three sequential and developmental study phases: designing more responsive and cost effective management systems directing efficient IRM management; organizing a system to reduce and certify the amount of paperwork needed to make management decisions and comply with Federal regulations; and, development of technological systems which will provide rapid access, processing and storage of information, needed to support management decision making. . . .

"The first requirement of [phase one] is development of a resourceful IRM management system supported by a staff development process stressing closer working relationships between staff and clients. . . . "[Phase two]. . . . The IRM system will be supported by a paperwork management process that will not only reduce paperwork workload, but will also delineate security and auditing techniques. Paperwork reduction and proper security measures must be accomplished without reducing operational effectiveness. . . .

"[Phase three]. . . . Development of efficient management and paperwork systems will be supported by advanced technology enabling rapid acquisition, processing, and storage of data. . . ."

Agricultural Research Service. ". . . The section entitled Current Situation discusses the current organization, staff, budget, and utilization of IRM technology in ARS. The agency has designated [the] Deputy Administrator, Administrative Management as the Senior IRM Official. All IRM activities and units are under his general direction. For FY 1983, approximately 132 person years were estimated to be involved in IRM activities and the overall IRM-related budget was approximately \$18.5 million. ARS has a very active program in all IRM areas — ADP and office automation, telecommunications, data administration, information systems, and paperwork management. The agency is well supported by the National Agricultural Library in the areas of library systems and information services. . . .

"Data acquisition devices and microcomputers are being used and will be used much more in ARS laboratories. A research-oriented ARS ADP technology center is being established to demonstrate IRM and automation technology. Major efforts will be undertaken to link ARS field offices using automation, and to reduce telecommunications costs by using modern PBX equipment. Extensive use of postal meters will also reduce costs and a pilot project using high-speed digital facsimile devices may improve priority mail services. . . ."

Agricultural Stabilization and Conservation Service. "Information is recognized in ASCS as a valuable asset and receives a high level of top management attention. Information resources management is a management philosophy which encompasses all organizational units and all agency planning. . . . The

functions and programs of ASCS are highly information intensive. As in other government bodies, the trend has been toward developing, generating and requiring more paperwork. The major thrust of data processing has been the collection and summarization of county office transaction data for accounting and for analysis of program effectiveness by mid-level managers. Needs of top-level managers, difficult to define for data systems planning, have increased paperbound requests for data from county offices. . . .

"Recent advances in computer technology, especially with respect to small computers, open new vistas of information resources management for ASCS. The ASCS IRM Plan calls for placing on-site computers in all 2,882 State and county offices. . . . County computers will store farm and producer records, perform calculations, prepare transaction documents . . . will reduce paper generation and document flow dramatically. . . . State office computers will provide . . . data processing . . . serve as telecommunication hubs . . . forwarding . . . data to Kansas City and Washington. . . .

"[Other directions] . . . A joint ASCS-FAS data base [to serve] Washington based personnel of both agencies. . . . information . . . will be accessible by all agency offices as a service to producers. . . ."

Cooperative State Research Service. "The Cooperative State Research Service (CSRS) has recently begun to address its Information Resources management (IRM) needs in a coordinated and integrated manner. Prior to the IRM concept of treating information as a resource and bringing together the functions of automated data processing, word processing, telecommunications, data management, records management, etc., the Agency looked at each function somewhat separately. . . . [is] gaining a better perspective on its information needs, as well as on the relationship of various IRM functions and how best to go about solving these needs. . . . Breakthroughs in technology will provide other tools to apply to Agency needs. By virtue of limited support staff ways must be found to perform the Agency's mission more effectively and efficiently than ever before. . . .

"These plans are merely a starting point from which eventually a well-thought out, coordinated approach to solving IRM needs will evolve."

Economic Management Staff. "The Economics Management Staff . . . for its initial Information Resources Management Long-Range Plan . . . [will] contribute to the development and take appropriate action within EMS to make full use of improved Departmentwide automated management systems such as those handling payroll, personnel, property, etc; and make cost effective use of current technology to fill the management and administrative support information gaps that currently exist between what Department systems provide and what agencies need to effectively manage. . . . While not included in EMS's long-range IRM plan, the Agency will be involved in development and implementation of the serviced agencies' goals and objectives related to electronic dissemination of information. This involvement will come in the form of packaging and "marketing" of information for this new information outlet."

Economic Research Service. ". . . Information management in all its forms, including the collection, analysis, creation, and dissemination of economic information, is central to meeting the Agency mission. This five year plan provides an Agency wide strategy which will be used to guide planning and procurement decisions at all organizational levels. . . . [It] sets out strategies for accomplishing major goals and objectives. . . . [such as] . . . Increase productivity and program effectiveness through more efficient use of information resources. . . . Provide improved user services in terms of responsiveness and quality. . . . Improve capabilities and coordination through automation, integration and the use of interactive systems. . . . Integrate most word and data processing functions, and use these technological advances to improve productivity. . . . Achieve effective data sharing in ERS. . . . Give researchers in ERS interactive access to the full capabilities of Agency database(s) via microcomputer and minicomputers. . . ."

Extension Service. ". . . Long-range IRM for the Extension Service (ES) is a dynamic process involving identification of roles, inventories, budget cycles, and procedures for review. . . . All ES long-range objectives [involve]. . . . Examination of data systems for need, elimination, duplication, and redundancy . . . Cost analysis of data system development and management . . . Definition of human resource requirements, sources, and roles . . . Inventory of ADP equipment and information dissemination hardware support . . . Assessment of technology to improve

'availability, timeliness, accuracy, integrity, privacy, security, auditability, shared use, and cost-effectiveness of all information resources'. . . . [Reference] 'USDA Long-Range Information Resources Management Planning Process', USDA, OIRM, April 22, 1983."

Foreign Agricultural Service. " . . . In fiscal year 1983, an agency wide training program was initiated through the ADP Users Group. . . . the FAS computer facility was moved into the joint FAS/ASCS computer facility and is fully operational. . . . completed the installation of the Global Economic Data Exchange Systems (GEDES) in 12 countries and now receive scheduled commodity reports via the Department of State (DOS) worldwide distributed minicomputer communications network. . . . expanded the use of word processing from two or three offices in FAS to every division in FAS. . . . At foreign posts word processing/data processing workstations have been installed in over 30 locations. . . .

"FAS plans to work closely with the ASCS to develop the FAS/ASCS joint computer facility into as FAS/ASCS information center. Over the next 5 years a new hardware/software system will be phased in to replace all existing hardware/software systems. One of the highest priority objectives is the procurement of additional workstations to improve the terminal to user ratio. This will improve productivity of both the FAS clerical and professional staff. Another high priority is the move beyond word processing to office automation over the next few years. . . . The installation of microcomputers in all agricultural trade offices is planned to provide standalone support for ATOs since most of them are not collocated with agricultural attaches. An effort has already started to define the requirements of an integrated data base. . . . need for nine new application systems was identified. . . . The program areas recognized that with all the planned changes, resources will be constrained. . . ."

Federal Crop Insurance Corporation. ". . . . The 1980 amendment to the Federal Crop Insurance Act resulted in a growth of programs unprecedented in FCIC history. Information management requirements increased accordingly and automated systems were installed and or expanded to meet immediate needs in the absence of an information resource management plan. . . . FCIC fully supports the Department Long-Range Information Resources Plan. The FCIC

management plan is keyed to specific goals of the Departmental plan. It is being fully integrated with the FCIC operations plan and budget. Extension of the planning effort is being reviewed as execution of the current plan is undertaken. . . .

"This plan places a high Corporation priority on:

- Increased productivity without increased personnel.
- Better utilization of existing resources.
- Planned acquisition of state of the art communications and data processing equipment and programs.
- Development of the long range plan at all levels of the Corporate operation.
- Improved responses to our clients - the American farmer."

Federal Grain Inspection Service. "The Federal Grain Inspection Service (FGIS) is looking for ways to reduce the total resources necessary to conduct its programs while, at the same time, maintain or improve upon the efficiency and effectiveness of those programs. . . . We plan to take advantage of recent improvements in ADP and telecommunication technologies to streamline our management of information. Our Information Resources Management goals (automation and paperwork reduction) are intended to facilitate the efficient collection, storage, distribution, and use of necessary information while eliminating information that is not important to the conduct of our programs."

Farmers Home Administration. ". . . . The current situation concerning Information Resources Management in the agency . . . suggests that FmHA is using Information Resources Management technology successfully, except for microcomputers, but its use needs to be expanded to achieve maximum benefits and increased production. . . . The assessment of Information Resources Management technology indicates two areas that FmHA needs to explore for potential benefits—micro-computers and distributed processing. These are being addressed by Information Resources Management Objectives. . . ."

Food and Nutrition Service. "The Agency's major

initiatives under the long-range Information Resources Management plan are to improve office automation in Headquarters and Regional Offices, to automate several program related processes at the field office level, to off-load as much work as we can comfortably handle from Departmental computers, and to reduce the paperwork burden on the public.

"The Agency is in the process of acquiring micro-computers to improve office automation in the Headquarters and Regional Offices . . . [to] assist in word processing, data entry, and small, simple, easy to operate data processing applications. The procurement will be completed in Fiscal Year 1983 with delivery and installation taking place [in FY 84]. . . . We also are taking steps to automate several of our program processes at the field office level. Feasible applications appear to be in retailer/wholesaler/bank monitoring; quality control reviews; sponsor/vendor/site monitoring; word processing; and other administrative uses. . . ."

Forest Service. ". . . Computer systems use on National Forests and throughout the Forest Service has grown rapidly. The use of the Fort Collins Computer Center (FCCC) has increased from \$300,000 in 1973 to over \$11,000,000 in 1982. There were 161 computer specialists in 1978 and nearly 400 in 1982.

"Like the technology tied to it, concepts [and] the attitudes about information management are changing rapidly. The Forest Service has conducted many evaluations and made three significant decisions in information management, to cope with these changes. First, the Systems Development Action Planning Team report of 1975 coalesced the Service's systems management organization and made the first step in integrating information management with data processing.

"The second major decision was to implement distributed processing in the Forest Service . . . [which] will create marked operating changes in the Forest Service's information flows and procedures. Electronic processing capabilities will be established at all principal Forest Service offices. The dispersed offices of the agency will be electronically linked creating a coordinated and uniform information processing structure. A broad spectrum of personnel and all facets of information flows will be effected. . . .

The third decision was to conduct another comprehensive management and systems review to assess the Forest Service's information use because of the changes . . . since [a] 1975 study. . . .

"The objectives of this plan include continuing developments in telecommunications, computer graphics, and data base information systems; and increased automated support of the directives, forms, reports, and records management systems.

Food Safety and Inspection Service. ". . . In an effort to structure functions and operations to take advantage of changing technologies, FSIS information resources management activities are currently being reorganized and enhanced. An IRM Review Board composed of the Agency's top managers has been established. This board is responsible for IRM policy formulation, planning review, and systems approval. A coordinating committee made up of representatives from the various programs and staffs has also been designated to assist the Board in the performance of its mission and objectives. In addition, automated data processing (ADP), office automation, and associated IRM activities are being reviewed in terms of increased capabilities and effective coordination of IRM resources. . . ."

Human Nutrition Information Service. "The major function of the agency is the collection, analysis and dissemination of information. The agency plan is to improve the procedures used to collect, prepare, and more efficiently disseminate this information. . . . Our surveys in the past and in the immediate future are carried out by manually completing a questionnaire which is screened, edited, coded, and then entered into a machine-readable form for further processing. With the changing technology, we are looking for equipment that is small enough in size for easy handling by interviewers with the power to handle the complete questionnaire and provide some editing capability to detect erroneous data at the time of entry. By automating the procedure, the time spent in preparing the data for analysis will be almost eliminated.

"Another area where effort will be concentrated is in . . . office automation [to be] accomplished by the use of word processing equipment. . . . long range plan is to develop a centralized automated file, available to all people who have authority for access. . . ."

National Agricultural Library. "NAL was an early entrant in the field of online databases, working on a shoestring. Its hardware and systems have not kept up with developments in this area or in research library automation. NAL seeks to regain a position near the leading edge of information technology utilization, again without excessive expenditure . . . Strategies include . . . Use of *high-speed text processing*. . . . Implementation of an *integrated library system*. . . . Creation of *non-bibliographic databases*. . . . "knowledge bases" and "expert systems" . . . online systems and/or videodisc to store, preserve, and disseminate the *full text* of publications. . . .

"In short, by using currently available, cost-effective, advanced information technology, NAL expects to improve its basic services and products while positioning itself to assist the Department in meeting new demands with new capabilities."

National Finance Center(OFM). ". . . Since its inception in 1973, the workload of the NFC has steadily increased while the staffing remained relatively constant. In addition to payrolling an average of 122,000 Department employees every 2 weeks, the NFC processes 13 million transactions a year and disburses in excess of \$4 billion a year . . . [It will] continue to examine and enhance its automated management systems to reduce costs and increase efficiency. All systems will be affected. . . .

"As part of its mission to provide cost-effective administrative systems, the NFC collects, processes, stores, and reports information for use by all levels of management in the Department. . . . Decisions made at the NFC have a major impact on the financial and administrative programs and information resources of the Department. With the continued evolution of the NFC as an information center for the Department, the capability to provide information at all levels of management on a timely basis in an integral part of NFC's Information Resources Management (IRM) planning. . . .

"To advance toward the realization of plans for a distributed processing environment, the NFC will provide agencies with improved access to administrative management systems through techniques of remote access for data entry, inquiry, report generation, etc. . . . Recent changes in ADP technology, especially in the areas of

telecommunications and ADP equipment, will significantly affect the data processing environment at the NFC. To ensure that our future ADP environment will accommodate the enhanced systems and the projected increased workload, NFC is currently taking all necessary and appropriate steps to obtain state-of-the art ADP equipment and software. . . .

"Since word processing implementation, NFC office automation planning has expanded to encompass plans for intra-office and inter-office networking equipment and facilities which will complement distributed processing and enhance the availability of information resources. . . ."

Office of Budget and Program Analysis. "As available resources (funds and staffing) become more scarce, increased pressure is placed on the need to assure that programs are accomplished effectively with the minimum resources required. During the late 70's and early 80's greater attention has been focused on details of spending and staffing by both the Executive and the Legislative branches of the Federal Government. As a result, extensive, detailed program and budget data is required more frequently and more immediately to respond to requests from these organizations. Data that could be provided in a few days just a few years ago must now be developed in only a few hours. The demand for quick analyses of the impact of decisions to change program levels or resources is intensifying dramatically. The opportunity to exchange automated data files within the Executive branch and between the Executive and Legislative branches is expanding each year. Automated systems are being installed and upgraded to manage and manipulate program and budget data in the Congress, OMB, and many agencies within USDA.

"OBPA is in the process of upgrading its computer capabilities to meet current and foreseeable future needs for program, budget and resource data and analyses and to provide opportunities for automation of office processes. . . ."

Office of Equal Opportunity. ". . . OEO is undergoing a feasibility study to identify its information needs and strategies for accomplishing those needs. . . . The major [thrusts of OEO are to] . . . Improve utilization of information within OEO . . . Encourage the participation of managers in use of high technology. . . . Provide models for use as management planning

tools. . . . Procure hardware for all applications, including a microcomputer. . . . Provide telecommunications network capability using DEPNET. . . . Increase use of office automation in integration with overall IRM system. . . ."

Office of Finance and Management. "The Office of Finance and Management (OFM) provides Departmental leadership, development and evaluation of programs in finance, accounting, Federal assistance, occupational safety and health, productivity and management improvement. The demand of such a broad spectrum of responsibilities requires effective and efficient management of information resources to support management decisions. . . . streamlining regulations and policies; improving the communication and availability of information; and improving technological capability for storing, handling, and analyzing information. . . ."

Office of Governmental and Public Affairs. ". . . Central to this IRM activity is extensive office automation, i.e. use of electronic word processors, electronic mail, and electronic retrieval, dissemination and transfer of information. . . . Through the office automation and electronic mail services . . . GPA units can communicate electronically (quickly and efficiently) [internally and/or externally] with each other and the Assistant Secretary for Governmental and Public Affairs. . . . other units of the Secretary's Office, most USDA agencies, land grant universities, State Departments of Agriculture (and National Association of State Departments of Agriculture), several Federal agencies such as the Federal Emergency Management Agency, Environmental Protection Agency, Food and Drug Administration and others as well as with some agricultural organizations and news media. . . .

"All GPA organizational units are using electronic word processors. . . . some are acquiring microcomputers. . . . The Office of Information's Radio & Television Division and Video & Film Division also have been moving to speed up voice and image communications. . . . testing delivery of radio news programs via satellite. . . . these new delivery methods could eliminate the delivery of video and audio tapes via the U. S. Postal Service, an increasingly costly and slow (by today's standards) [methods]. . . . The Office of Governmental and Public Affairs will continue to expand and enhance its electronic communications capabilities. . . ."

Office of International Cooperation and Development.

". . . . The use of IRM technology has been very limited up to this time. However, due to short supply of personnel resources, the interest in use of modern techniques to maximize efficiency is very high. Electronic mail, electronic dissemination of information, and communicating word processors are related technologies that have applicability to OICD's plans. Equally important will be our ability to integrate these and other "office automation" functions with data processing. . . ."

Office of Inspector General. ". . . . OIG strives to be at the forefront in the Federal Inspector General community in the use of computers and statistical techniques. By prudent acquisitions and the use of ADP resources, reviews of USDA and USDA-funded State administered programs can be performed in less time resulting in savings; but, more importantly, the reviews can be much wider in scope and in-depth detail through the use of ADP resources . . . used in [some of] the following areas: . . . prevention and detection of fraud, waste, and abuse; . . . supplying information to auditors/investigators from data base analysis and from USDA program data; . . . ADP systems that support OIG management. . . .

"OIG has been using office automation equipment to a limited degree since the mid-1970's when initial word processing equipment was obtained. It was only during recent years that OIG made a concerted effort to establish a nationwide office automation . . . network connecting Headquarters and field offices. . . .

Office of Information Resources Management ". . . OIRM plays a dual role at USDA: provider of management oversight and direction for IRM activities throughout the Department; and provider of large-scale computer and telecommunications services in support of the USDA agencies . . . thrusts for OIRM, above and beyond its predecessor organizations are: the broader scope of IRM (not just ADP and telecommunications); the review and evaluation by OIRM of agency IRM activities; and the design and implementation of Departmentwide long-range IRM planning of which this plan is a part.

"The need for OIRM to place future emphasis, both short and long-range, on. . . . The emergence of end user computing and its potential for providing a significant portion of computing power at USDA. . . .

The importance of developing long-range ADP strategies through OIRM's long-range IRM planning process. . . . Improvements to OIRM's ability to calibrate its future demand for services at the DCC's. . . . each independently, characterized their environment as one of continuing, rapid, dynamic, technological change. Their challenge is to continue to provide high quality, effective, and responsive services to their client agencies whose own requirements are themselves undergoing rapid change. . . ."

"OIRM is committed to the use of new technology to improve and streamline its own work and the work of the Department and its agencies. It supports the concept of tracking and planning for the future use of emerging technology and eliminating obsolescence . . . must evaluate IRM technology from . . . different perspectives . . . [one] a comprehensive, industrywide assessment, gathering and sharing information on new tools and techniques potentially useful to USDA agencies, "across the board."

"Managing the Departmental Computer Centers and providing Departmental data and voice communications services, requires OIRM to view technology from the perspective of a major supplier of information services, Departmentwide. . . ."

Office of Operations. "The Office of Operations has twenty-five ongoing ADP Applications. . . . on the New Orleans and Washington Computer Centers, the HP 44 in OIRM and the PDP 11/70 in the Mail and Reproduction Management Division (MRMD) of the Office of Operations. . . . major initiatives [are] implementation of the three subsystems of the Property Management Information System (PMIS) and to put the automated mailing list on the MRMD PDP 11/70. . . . programming efforts in the Office of Operations are greatly hampered because of the lack of in-house systems analysts and programmers. . . ."

Office of Personnel. ". . . OP must assure that [the Department's personnel information] . . . is processed, maintained, and retrieved in a manner which facilitates management of all the other program areas in the agency or department. . . . The management of personnel information encompasses two major areas; the operational and the informational. Personnel offices must be able to input and process data and information on people and positions in an efficient, accurate, and timely manner. They must also be able

to extract that information and format it in an efficient and timely manner. A personnel management information system must be able to fill both needs in a cost efficient manner. . . .

. . . [plan] for the Office of Personnel focuses on the study of the personnel management information requirements within USDA, the pilot testing of the Air Force Personnel Data System—Civilian (PDS-C), the evaluation of the PDS-C as well as the NFC Payroll/Personnel system, the recommendation to the Assistant Secretary concerning the direction the Department should take concerning the personnel management information system for the Department, and the carrying out of the mandate given the Director of Personnel by the Assistant Secretary for Administration. . . ."

Office of Small and Disadvantaged Business Utilization. "[This office] is a small staff office consisting of five (5) professionals and two (2) secretaries. Eighty-five percent of OSDBU's budget is for salaries and the remainder is for operational costs. As a result of limited funds, we cannot expand at this time to any updated automated technology and will continue using our manual resources system as well as the services of the Small Business Administration, the Department of Commerce's Minority Business Data Bank and any other resources available to us internally and externally to the Department."

Office of Transportation. ". . . A priority of the Office of Transportation is the planning and development of a IBM-PC compatible LAN connecting agency micro-computers. Development of a LAN in the Office of Transportation . . . would facilitate the mass storage of and direct access to agency datafiles while minimizing duplication of resources . . . would increase agency productivity through effective and efficient management and utilization of information resources and technology by allowing the sharing of resources, both equipment and datafiles, among users . . . [and] would also enhance the intra-Department availability of information and information systems by allowing users in other agencies access to OT data bases and files. . . ."

Packers and Stockyards Administration. ". . . The Agency is improving its efficiency through automation. The jurisdictional, registration and bonding programs will be the first programs to be fully automated.

Automation will be expanded to other programs of the Agency as rapidly as possible. . . . The Agency is presently undergoing a review of all the regulations issued under the Packers and Stockyards Act. . . . [to reduce] the regulatory burden on the livestock, meat and poultry industries . . . [and] update and streamline the regulations and policy statements making them easier for the industry to understand and follow. . . ."

Rural Electrification Administration. "REA foresees a dramatic increase in end user computing throughout government and industry. REA's plans are to evaluate and utilize these new technologies where productivity gains and cost reductions can be ascertained. . . ."

Soil Conservation Service. ". . . This five-year plan provides an agencywide strategy for an integrated information and data processing system. This strategy will be used to establish national policy and make budget decisions and to guide planning and procurement decisions at all SCS organizational levels. . . . In 1980, SCS [began] a comprehensive requirements analysis for an integrated information system. The . . . study identified 56 specific

applications needed to carry out the SCS mission and recommended that these be achieved by a system that includes mainframe computers, minicomputers, and microcomputers. These 56 applications were refined and prioritized in an IRM Planning Workshop in March 1983, when approximately 40 SCS personnel from all organizational levels met to begin planning for system development. Participants prioritized each application according to its potential for achieving the SCS mission. . . ."

Statistical Reporting Service. "The Statistical Reporting Service has adopted four goals for its initial Information Resources Management Long-Range Plan. . . . [that] incorporate nearly all of the specific recommendations for action contained in an Agency Long-Range [Program] Plan for all activities which was completed March 1, 1983 . . . goals as defined parallel eight of the nine IRM goals defined for the USDA. . . . Nearly all of the workload associated with the SRS goals will be accomplished by Agency staff members. A number of Agency working groups will be named with responsibility for specific tasks. . . ."

3. IRM Technology Assessment - FY 83 and beyond

In March 1983, a major computer manufacturer announced its newest microcomputer designed for use as a personal computer (PC). Some of its features: a standard 128K of random access memory, field expandable to 640K; dual disk devices for double density 5-1/4" hard disks, each with a storage capacity of 10 million characters. This machine would easily fit on a desk top and yet provide the processing power of the IBM Model 30 first used, circa 1960's, by USDA's Washington Computer Center as its mainframe processor. But the cost of older machine was 40 to 50 times that of the new PC, with its "bargain" price tag of "under 10,000".

This is not a shocking bit of news today. It is just a single example, among many, of evolutionary changes that alter the economics and use of a technology — in this case, of computers. The new low cost desk top computers in the market place today are dramatically changing the world's technological environment, in general, and that of the USDA, in particular. They are creating a huge family of present and future "end users" able, for the first time, to afford their own computers at their finger tips.

But what's next? What new breakthroughs, new tools, new machines will industry bring us? And when? The answers to these questions, and many others, are especially important to long-range planners who must follow and anticipate evolutionary trends. New products, around the corner or in the out years, could drastically impact their long-range plans and, thus, the future of their organizations. This is especially true in planning for IRM whose technologies are so volatile.

In recognition of the importance of a continuing technology assessment, the Department incorporated into its long-range IRM planning process two kinds of technology assessments: first, an industrywide assessment compiled by OIRM and distributed for the first time to USDA agencies as part of the FY 83 planning guidance package. Excerpts from this assessment are presented in section 3.1. Second, the USDA agencies were asked to make, and include in their plans, their independent assessment of technological advancements of particular interest to them. These agency assessments are summarized in section 3.2.

3.1 IRM Technology Environment —Industrywide

Plans for future improvements in IRM are laid against a backdrop of increasing demands for higher productivity, rising costs of human resources, and tightening budgetary constraints. To brighten up this otherwise dismal picture, the IRM technology industries are producing more and more new devices and systems, providing lower and lower cost automated solutions to meet the demands of the current environment. But what of the future?

Most of the future developments will be made possible by additional breakthroughs in the exploitation of very-large and large-scale (VLSI and LSI) integrated electronic circuits. These circuits were primarily an outgrowth of the research programs of the 1960's and 1970's. Microprocessors or computers on a chip are finding their way into a wide range of devices from the automobile to electronic games to intelligent computer terminals, personal computers, and mainframes. Their use will be limited only by human imagination and the ability of manufacturers to keep up with the demand and to show an increased profit through their use in products.

The technological capabilities that will be available in the market place over the next five years offer tremendous opportunities to improve the performance of all IRM efforts and to reduce operating costs through increases in productivity and efficiency. The only limitations or failures in tapping these technological opportunities will be from either a lack of adequate investment to acquire, and to learn to use, the new technology or inability to adequately plan and manage its implementation. Even with adequate capital investment, planning, management, and training, it may be extremely difficult to keep pace with technological advances.

Uses of computer based technology will continue to expand with new, innovative products which can be applied in the home, office, laboratory, or field to assist professionals and nonprofessionals in the performance of their functions. Such products as executive and professional work stations, integrated office systems, and intelligent communications networks will continue to be introduced and expanded in capability at relatively decreasing cost.

Technology will continue to be integrated into the working environment of nearly all functional areas and organizations within the Department, as elsewhere. The distinction between computers, communications, information management, and other previously separated functions is becoming more difficult to maintain because of the effects of technology integration. Overall, technology integration is expected to yield significant benefits to the user community. However, the price to be paid will be ever increasing complexity resulting from the increased need for coordination in the design, implementation, management of the technology, and the new applications supported by the technology.

A brief discussion of some of the IRM technologies and their expected changes over the next several years follow.

- *Distributed Processing Systems (DPS).* The evolution of distributed processing systems is more constrained by market and industry readiness than by technical factors. Most distributed data processing systems in the past have been justified on the basis of a single application which is generally transaction processing-oriented and dependent upon several geographically distributed but functionally integrated databases. It has usually been the case that once a distributed processing system is installed other local applications are added to the systems to increase the effectiveness of local management or operations. However, the successful distributed processing systems, as a rule, retain centralized control of the databases and programs which are essential to the operation of the main application for which the system was justified. Prudent users perform a careful analysis of each application on a case-by-case basis to determine whether an application is more effectively implemented using a distributed data processing solution.

The indications are now that the general-purpose DPS is evolving, much as general-purpose computers did in the past, so that their use for a much larger class of automated systems will be possible in the future.

- *Office Systems.* Office systems are (from the technical viewpoint) one variety of distributed processing systems. Both incorporate

microprocessor-based systems (MBS). Both serve end users in their local offices. However, early distributed processing systems traditionally dealt primarily with data processing; office systems deal more with text, voice, and image material. Many users of distributed data processing systems are already adding limited text and image processing capabilities to them.

Some functional industrial constraints are slowing the development of office systems. Multi-media office systems require the skills formerly resident in four separate industry sectors (i.e., office products, computer hardware, computer software, telecommunications); a vendor competent in any one of the four must acquire the skills of the other three before it can offer mature multi-media systems. It also appears that the modular information appliances for end users in business and professional applications are converging with those in consumer electronics (a fifth sector), requiring a new form of retail distribution system. Interactive video disc systems for corporate applications have their roots in consumer video disc technology, for example, but it seems unlikely that present consumer-oriented retailers can develop or sell such systems.

Similarly, some functional user constraints are slowing the use of office systems. Office systems will evolve gradually, then, with single-medium systems (e.g., word processors) slowly combining functions with other single-medium systems (e.g., for distributed data processing and telephone service). Observations of user behavior support this view; most organizations can assimilate only small office system changes without disrupting their activities and require about one year between changes.

- *End User Computing.* Within the last decade, it is probable that the greatest change in the government ADP environment has been the tremendous growth in end user computing via personal computers and terminals.

By the end of this decade, end user computing will account for well over half of all computing performed in most government agencies—a level that has already been reached in a few organizations and is about to be reached in others. This trend represents

a dramatic change from earlier centralized data processing where users could have only limited access to data via terminals. Many of today's users have direct contact with the computer without the requirement of an interface by a computer operator.

Government managers express little actual concern about the astonishing growth of minis and micros within their organizations. Almost universally, they seem to be adjusting comfortably to the arrival of these machines. Most managers have come to the realization that the successful managers of the future will have to make far greater use of computers than in the past; they know they must become knowledgeable about ADP and make intelligent use of the technology in order to survive as managers.

Typically, government executives view the cost of personal computers relative to the potential benefits that they expect their agency to derive as being a sound investment. Personal computers, in fact, offer the low cost computing that has been promised for years; government managers seem eager to explore ways to make use of the new technology now that it has arrived.

- *Hardware Technology.* Two indicators often used to measure the advancement in integrated circuit and computer technology are the density of components on each chip, and the number of operations per second that can be performed. Speed is usually defined in terms of MIPS-millions of instructions per second or MFLOPS - millions of floating operations per second. Circuit densities of 64,000 components or more per chip are available in the market place today. It is projected that by 1986, densities of up to 1,000,000 components per chip will be commonly available. With respect to processing speed, some of today's largest computer systems are approaching 100 MIPS. By cascading or coupling a number of individual processors, the effective processing speed that can be achieved is almost limitless. The practical limitations in integrated circuit technology today are inherent problems associated with heat dissipation as circuit densities increase, and propagation delays between components within the chip (limited to the speed of light).

As circuit densities increase and high volume demands allow for expansion of production capacity

in the marketplace, unit cost of chips continue to plummet. These decreases in unit cost and increasing capabilities will continue to expand the opportunities for many new and different uses of the technology in military, commercial, and consumer applications.

- *Software Technology.* Throughout the history of computer technology, software has lagged behind hardware in terms of sophistication, performance capability, and reliability. The almost infinite variety of ways in which software (computer programs) can be designed, organized, and implemented has inhibited the development of standardized techniques and languages and slowed the transition process from old to newer technology. In recent years, software maturity has become the dominant factor in terms of cost and developmental pace of new computer systems. Software development and maintenance continues to be highly labor intensive and to increase in size and complexity with each new generation of computer equipment.

Current trends in software technology center around efforts to improve high order programming languages and tools to make computers easier to use and to increase programmer productivity. Another major goal is to provide the capability for non-ADP professionals to develop their own systems and solve problems more easily without requiring the services and skills of ADP professionals who continue to be in short supply. Many new products in the form of automatic programming aids, ultra user friendly languages, data management tools, and other programmer and user aids will continue to be introduced over the next several years. Development of new software standards in such areas as operating systems, development of cross compilers (a programming tool), and emulators will be emphasized to make software and applications more portable and less costly to convert and maintain.

In the coming decade, software changes will be more significant to computer users than will hardware changes. Hardware trends will result in reduced cost, but software trends will bring changes in the way the typical data processing installation functions and the relationships between the data processing department and users. The trend toward ease of use is the result of terminal proliferation,

greater user familiarity with electronic devices, and the growing discontent of users who are often told that the programming staff will take two or three years to design and implement a new application. The objective of the newer software is to support computer systems that can be programmed and operated by non-computer trained personnel.

The software tools that will enable user personnel to develop applications will also make the professional programmer more productive. Software products that perform input, processing, and output are beginning to appear in the marketplace. These new products will gradually replace today's programming languages for most applications and will require more hardware resources as a trade-off for their user friendliness.

- *Telecommunications Technology.* The telecommunications industry is currently undergoing a dramatic change from a predominantly monopolistic to a competitive environment. In addition, there is a change underway from an analog electromechanical environment to a sophisticated electronic digital based technological environment. This includes digital information transfer switches, utilizing the latest, very-large and large-scale integrated electronic circuitry, fiber optic and satellite transmission media, and the inclusion of integrated digital computers in the provision of total telecommunications facilities.

Telecommunications management in the past has primarily addressed the transmission of the human voice from one point to another using wires or radio waves as the communication medium. Modern telecommunications facilities include the use of satellite relay stations, glass fibers carrying light waves, laser beams, and totally solar-powered ultra-high frequency transmitters in addition to the former media.

In addition to the transmission of the human voice, the new facilities are required to accommodate the transmission of digitized information from large and small computers, facsimile machines, communicating office text processors various high and low speed data collection and monitoring devices, and video (visual) images. The ideal total system will include support for all voice and non-

voice transmission and associated services required by a corporate or government entity. Industry is now perfecting the ability to translate the human voice into binary form (bits of information represented by a series of 1's and 0's). This translated form may then be carried over facilities designed primarily for the transmission of traditionally digitized information such as computer files, automated office text, digitized facsimile images, remotely sensed information, and other information converted to digitized form. This merging of many kinds of information into digitized forms is making it more practical to provide a total Departmentwide telecommunications support facility.

Standards for linking distinct communications networks are being addressed by organizations such as the National Bureau of Standards and the International Standards Organization (ISO). In the near future, the results of the work being done in the area of linking distinct communications networks (also called internetworking) should begin to have a positive impact.

Departmental Implications

The cost of technology will continue to decline, relatively speaking, over the next several years. Or viewed another way, systems costs may remain stable (disregarding inflation), but with a significant increase in technological capability per dollar invested.

Competition in the marketplace coupled with demand for new technological products is expected to continue the historical cost/technology growth trends for the next several years.

Other areas having Departmental implications are:

- *Compatibility and Transportability of Software.* Users would like to be able to transport their programs across product lines; to have a selection among competitive vendors' offerings without having to reprogram existing software. Vendor independence cannot be guaranteed unless a comprehensive set of universally supported standards exists. Some standards exist now and others are slowly emerging, but the process is slow because of its inherent complexity and manufacturer self-interest.

A user wanting to remain as vendor-independent as possible should observe the following four guidelines in preparing new systems:

- Programming should be in standard high-level languages with no vendor dependent extensions allowed.
- Programs should be modular. In particular, input-output and file processing functions should be separated from computational ones.
- Inter-system communications should be conducted according to ISO standards, which will probably be supported by all vendors at this level.
- Hardware modules that are to be retained as the information systems evolve (terminals, communications controllers, processors) should as far as possible have their specific functions and interfaces established by microcode and software, rather than by hard wiring.

It is easier to establish standards for new applications than to retrofit them to existing ones. In many organizations, old, non-standard applications will be running for many years alongside new ones, until it becomes cost-effective to replace the old application with a new one or a commercial package.

- *Information Control and Security.* Commercial requirements for access control and data security are generally less stringent than those of military security. These remarks are confined to commercially available products and techniques. Physical access to terminals and machine spaces is currently controlled by passwords, identity cards, terminal identifiers and the like. Logical access to computer software and databases will be subject to improved control. For the relatively few commercial users desiring data encryption, the NBS standard will be satisfactory. No major effort is envisioned for improving the level of security provided.
- *Personnel and Maintenance.* After 1985, the end users of the new systems will do much of their own programming via interactive dialogues with easy-to-use software, so they will no longer need to work through application programmers. However, user

organizations will need central groups of highly-trained technicians to *establish the environment* in which the end users work: to select the hardware and systems programs, to establish the standards, to define the software tools available to the users, and to perform information resource management functions. The emphasis will be on personnel quality rather than quantity. A cadre of experts will be required whose technical knowledge may be greater than presently needed. Application programmers will still be needed for the organization's production applications, perhaps as many as are now employed in many organizations. However, their numbers will not rise proportionately to the total amount of programming done in the organization.

The application programmers remaining in user organizations will be equipped with improved tools to help them, often resident in their versions of the multifunction workstation (the "programmer's workbench"). Paradoxically, however, the productivity of the developmental programming function itself is not likely to be enhanced much. Developmental programming is the most intricate, the most skilled and the most highly variable of the components of data processing system development; hence, it is the least likely to be automated.

The new software development aids should primarily be considered as tools for developing larger systems better. The paybacks will be found in areas other than programmer productivity, such as documentation, maintenance, end user training, and faster response to small problems.

Operations personnel requirements should slowly decline; system modules of all types should become increasingly automatic in operation, requiring less loading of programs, scheduling, changing of media, and so forth. Maintenance of electronic modules will become much easier and less costly. Unfortunately, the reliability and maintainability of electromechanical peripheral devices (disk drives, printers, etc.) will not increase so much. Combining this fact with a probable proliferation of information system modules in relatively inaccessible field locations, the result may be that overall cost and quality problems of system maintenance will remain at approximately their present level.

Reference. For more detailed and current information concerning particular technical areas see the technical reference document, "Technology Environment and Forecast - FY 84", prepared by U. S. Department of Agriculture (in cooperation with NBS), January 1984.

3.2 Agency IRM Technology Assessments

The automated tools and techniques available in the marketplace now, and the many under development by industry, give USDA agencies a wide range of automated solutions to meet their IRM support requirements. Judging from the assessments in the set of agency plans, agencies are investigating and evaluating all possible means to improve agency operations through automation. Generally speaking, agency requirements fall into one or more of three basic categories:

- Administrative operations;
- Program/mission specific applications;
- Intra and/or interagency integrated operations.

IRM Technologies of Interest

Some of the applications and/or tools of interest in the administrative operations are:

- Electronic mail;
- Advanced data base management systems;
- Proprietary software packages;
- Personal computers;
- Interactive data storage and retrieval;
- Audio and audiovisual systems; Advanced word processing/office automation;
- Word processing networks;
- Photocomposition systems;
- Automated graphics;
- Direct data entry devices.

The variety of highly specialized program/mission-

oriented work by agencies in the Department implies a variety of IRM support requirements, many unique to a single agency. Examples of technologies used, or cited in Agency plans as potentially useful in meeting these agency-specific requirements in the near future are:

- Automated publications;
- Optical character readers;
- Remote sensing systems;
- Microfiche/microform micrographics;
- Advanced statistical software;
- Advanced automated interviewing equipment;
- Improved automation security;
- Laboratory automation and process control;
- Automated modeling;
- Laser disc storage/printers.

Several of the large, geographically dispersed agencies are turning to automation technologies to realize a level of functional integration, programmatic and/or administrative, not possible with manual operations. The acquisition of thousands of small to medium size computers is planned for agencies' county and state level offices over the next five years. Many of these offices will be linked to Washington headquarters and/or DCC's via telecommunications.

Agencies are planning—some for the first time—to design and implement shared data bases housing information of common or global use. Entry in, and access to, these data bases will be interactive, not batch, as in the past. The kinds of applications and tools that will be needed include:

- Advanced Data Base Management;
- Distributed processing (software & hardware);
- Advanced voice and data communications;
- Video conferencing/teleconferencing;
- Local area networks.

Planned Use of Technologies

The technologies supporting general administrative functions are primarily office automation applications. Many of the agencies currently utilize stand-alone word processing; however, agencies plan to modernize these office systems by incorporating both word and data processing. The planned implementation of new, advanced office automation systems, word processing networks, and electronic mail reflects agency efforts to increase their ability to control, utilize, and maintain information in the future.

Through the use of advanced data storage and retrieval techniques, improved software packages and personal computers, information usage will be distributed to individual program areas and personnel within each agency. This distribution of capabilities when combined with automated graphics, photocomposition and audio-visual systems can—in the agency view—improve both the productivity and the quality of IRM support for agency administration.

Program/mission-specific applications may be implemented to further improve productivity levels for agency programs. Through the use of mass data storage technologies such as laser disc and microform, the amount of information stored in machine retrievable form can be substantially increased. Remote sensing systems and automated security techniques can increase the level of information security while reducing associated labor costs. Remote data entry and retrieval systems, optical character readers, and advanced statistical analysis software can increase the ability of most agencies to perform program planning and analytic functions. The introduction of new IRM technologies can expand the support of program management and improve the quality and availability of agency services to the public.

The third general area of technology application involves functional integration within an organization using IRM technologies. As each individual support area within the various agencies is automated, and the control and management of information is improved, requirements for timely and accurate distribution and recovery of data will increase. Through the use of technologies such as distributed processing, satellite transmission, telecommunications networks, and advanced data storage and retrieval, integrated IRM services can expand, first within then across agency boundaries.

Tables 1-1 through 1-5 show the predominant IRM technologies the USDA agencies are planning to use, and in what time frame within the five year span covered by this plan. The last of these tables shows agency totals for each of the technologies. Program and/or administrative applications, office automation, micro/personal computers, telecommunications, and data base management systems far out rank the other technologies identified by the agencies plans. It should be interesting to compare similar lists in the future as new plans evolve.

Economic Trade-Offs

Much has been said in this plan, so far, about the benefits of automation—the potential for increased productivity, better accessibility of information, more efficient agency and Departmental operations, and improved services to the public. These benefits will only be realized after a substantial investment in time, dollars, and staff resources, and organizational commitment to the job to be done.

These investments are “up front”; the benefits come later, after new systems become operational and are accepted into the mainstream of USDA. These technologies are, in toto, incredibly complex; implementing the systems that use them will require far more highly skilled technicians and scientists than even USDA employs today. Herein lie the economic trade-offs; building a larger, highly skilled staff of technical specialists today, at a great cost, and acquiring equipment and software at an even greater cost, in order to realize the savings and improvements of automation tomorrow.

These improvements, however, cannot be realized without drastic changes in the roles that agency program and administrative management play; new skills and management practices will be required. Close cooperation between agency top-level managers and its team of IRM technical specialists will be needed through every phase of development of every new automation project, beginning with the agency IRM planning. The higher the degree of automated integration of agency operations to be attempted, the more critical will be the need for close cooperation. Thus, there are hidden costs that may go unrecognized or unacknowledged by some. These are the implicit costs of management involvement, time, and commitment, which may be substantial.

**Planned Use of IRM Technologies
by Selected Agencies**

IRM Technologies	ACS	AMS	ARS	APHIS	ASCS	CSRS
Office Automation	84	84-85	84-88	84-85	84-88	84-88
LAN						
PBX			84-85			
Facsimile			84-88			
Tele/Video Conferencing			84-88			
Distributed Processing						
Satellite Communications						
Program and/or Administrative Applications	84	84-88	84-88		84-87	84
Systems Hardware	84	84-88	84-88			
Telecommunications	84	84-88	84-88	84	84-87	
Electronic Mail		84-88	84-88			84-88
Micro/Personal Computers	84	84-88	84-88			84-88
Minicomputers		84-88				
Array Processors						
DBMS		84-85	84-88		84-85	
Graphics			84-88			
Video & Other Disk Storage						
Modeling & Simulation			84	84-88		

Table 1-1

**Planned Use of IRM Technologies
by Selected Agencies**

IRM Technologies	EMS	ERS	FmHA	FCIC	FGIS
Office Automation		84-88	84	84	84
LAN					
PBX					
Facsimile					
Tele/Video Conferencing					
Distributed Processing			84-88		
Satellite Communications					
Program and/or Administrative Applications	84	84-87	84-86		85-86
Systems Hardware					
Telecommunications			84-88		84
Electronic Mail					
Micro/Personal Computers	84	84-85			84
Minicomputers		84-85		84-88	84
Array Processors					
DBMS		85		87	
Graphics		84-85			
Video and Other Disk Storage					
Modeling & Simulation					

Table 1-2

**Planned Use of IRM Technologies
by Selected Agencies**

IRM Technologies	FAS	FS	NAL	OBPA	OFM
Office Automation	84-85	84-86			84-87
LAN					
PBX					
Facsimile					
Tele/Video Conferencing					
Distributed Processing		84-86			84-88
Satellite Communications	84-87				
Program and/or Administrative Applications	84-85	84-88	84-85	84-86	84-88
Systems Hardware	84-86		84-85	84-86	84-88
Telecommunications	84-86	84-88		84-86	84-87
Electronic Mail					
Micro/Personal Computers	84-86	84-88	84	84-86	
Minicomputers			84		
Array Processors			84		
DBMS	84-87	84-88	84-86		84-85
Graphics		84-85			
Video and Other Disk Storage			84		84-88
Modeling & Simulation					

Table 1-3

**Planned Use of IRM Technologies
by Selected Agencies**

IRM Technologies	OGPA	OIRM	OIG	OICD	OO
Office Automation	84-85	84-88	84-88		
LAN		84-87		84	
PBX		84-88			
Facsimile	84-85				
Tele/Video Conferencing	84				
Distributed Processing		84-88			
Satellite Communications	84-88	84-88			
Program and/or Administrative Applications	84	84-88	84-88	84-85	84-85
Systems Hardware		84-88	84-88	84-85	
Telecommunications	85	84-88	84-88		
Electronic Mail	84-88	84-88		84	
Micro/Personal Computers	84-85	84-88			
Minicomputers		84-88			
Array Processors		84-88			
DBMS		84-88			
Graphics		84-88	84-85		
Video and Other Disk Storage		84			
Modeling & Simulation					

Table 1-4

**Planned Use of IRM Technologies
by Selected Agencies**

IRM Technologies	OT	PSA	REA	SCS	SRS	Agency Total
Office Automation	84	84	84-88	84-86		20
LAN	84			84-86		4
PBX						2
Facsimile						2
Tele/Video Conferencing				84-86		3
Distributed Processing		84		84-88		6
Satellite Communications						3
Program and/or Administrative Applications	84		84-85	84-88		22
Systems Hardware				84-88		11
Telecommunications				84-86	84-86	16
Electronic Mail					84-86	7
Micro/Personal Computers	84	84		84-88	84-88	17
Minicomputers			84-88			7
Array Processors			84-88			3
DBMS	84	84	84	84-88		14
Graphics	84					6
Video and Other Disk Storage	84					4
Modeling & Simulation			84-85			3

Table 1-5

4. Future Outlook

- Five year horizon

This section poses "future" changes, some planned and some hypothetical, in the USDA environment over the next five years and examines their potential impact on the Department's IRM program. Changes are viewed from three different perspectives:

- The potential changes in the Department and their impact on IRM;
- The changes in IRM brought about by the implementation of the family of long-range IRM plans for FY 84-88;
- The sensitivity of the plans to unexpected, adverse changes.

4.1 Departmental Changes

Organization

The USDA, a large, well-established federal organization, has shown a high degree of stability over many years. It will most probably be in the same "business" five years from now, and much longer. But stability internal to the Department is another matter.

Based on USDA's history of reorganizations, combining and/or dividing agencies and their functions, the probability is high that similar reorganizations will take place in the future. A few hypothetical, but highly probable, changes are suggested below, along with mini-scenarios of their impact on IRM.

Change: Two USDA agencies, A and B, are merged into one. Each agency has established its own distributed processing environment.

Impact: The hardware and systems software of A versus B are incompatible. Agency A's program related applications do not run on agency B's computer systems and visa versa. Internal automated administrative systems are incompatible, both technically and procedurally. Significant investments in time, dollars, and staff resources are necessary to resolve the problems. New hardware plus resystemization and redesign of half of the automated applications and retraining of hundreds of end users are necessary.

Change: A major reshuffling of office assignments in the South Building affects a dozen or more agencies.

Impact: Several agency-owned local area networks supporting integrated office automation systems have to be scrapped; new ones have to be installed in the new locations. During the process, agencies have to revert to manual procedures. Productivity is adversely affected.

Change: After many years the Department elects to restructure its field offices along the 1970's concept of Agricultural Service Centers to provide "one-stop service to the farmers". This restructuring begins in 1985, but will not be completed for 10 years, beyond the time span of this plan.

Impact: The five or more agencies impacted are expected to share field office automated systems. Existing equipment is inadequate to support multiple agencies; new systems have to be acquired, eventually, for over 10,000 field offices. The coordination of the physical relocation with the acquisition of equipment, and necessary redesign of software applications becomes a real challenge as does the development of joint, multi-agency RFP's for thousands of new computers. Settling on a costing algorithm for shared equipment that is equitable for all parties creates some substantial roadblocks. Agriculture's service to the rural community suffers in the interim.

Program Changes

Many of Agriculture's programs are well established; over the years, they have been predictable, if not totally stable. On balance, these programs have tended to expand and, with their expansion, to impose heavier IRM support requirements.

Change: Several programs supported by several USDA agencies expand in the same time frame.

Impact: In one case, the expanded programs are serviced by a Departmental Computer Center, already operating at near saturation with CPU cycles and disk space at a premium. The expanded applications supporting these programs (after reprogramming) saturate the DCC. Responsiveness to *all* DCC users degrades, while the DCC is acquiring expanded capability. GSA insists on a recompete on the entire system which then results in extremely costly reconversions for the many agencies using the center.

In the second case, the agencies whose programs are affected each have their own distributed processing set up. Hundreds to thousands of machines in field offices have to be replaced with new higher capacity ones, and applications reprogrammed. Some agencies "sharing" this field office equipment find themselves having to convert applications for the new equipment even though their own agricultural programs are unchanged. Administrative systems are impacted, as well as programmatic systems.

Change: Significant new agricultural programs are established.

Impact: Much of the impact is the same as expanded programs, except that developing new applications is more time consuming and demands more staff resources (which may not be available) and/or contract programming support, which has grown even more costly.

The affected agencies need larger, more powerful computers in the field, and acquire them; the agencies "sharing" the computers once again are forced to convert and have to pay a higher price for their portion, even though they derive no additional benefits.

Budgetary Changes

Based on the recent past, the USDA program budget will remain at the same or lower level over the next five years (as per a Departmental planning assumption). It is highly improbable that more dollars or staff resources will become available anytime soon.

Change: USDA budget cuts of 5% the first year are followed by 3% cuts for the subsequent four years — a total of about 16% reduction from the FY 84 level. Equivalent reductions in personnel ceilings follow.

Impact: Acquisition schedules for the thousands of small scale computers targeted for the field offices will be protracted. From the individual Agency's viewpoint, this delay would be disappointing, but this extra time might be an advantage to the Department, as a whole, because there would be more time to work out resource sharing arrangements between agencies. Lowered employment ceilings imposed could be made through attrition, as has happened in the past.

4.2 Planned IRM Evolution

Agency plans over the FY 84-88 period will bring significant changes to the Department's IRM support capabilities. Most changes will affect a substantial number of the Department's 17,000 + field offices in the form of: thousands of small and mid-range computers located on-site, supporting local office automation and program functions, and communicating to central hosts in the Department; communications (voice and data) to interface DEPNET or form local area networks in support of office automation.

Many of the USDA agencies have objectives to acquire communications and/or computers, each involving \$5 million dollars or more over the five year plan. (Reference Section 7 for more financial information.) These agencies, as well as others, are planning new intra-agency, automated administrative systems to support and improve agency operations. In the plans, these internal administrative systems occur almost as frequently as new programmatic applications.

On a year-by-year basis, the kinds of changes in IRM that would result from successful implementation of USDA's collective IRM plans for FY 84-88 are identified here.

FY 84: This is the start-up year for most agency IRM plans. Thus, many projected accomplishments are in the system initiation phase, such as : requirements analysis, feasibility studies, and exploring use of new IRM technologies. While some agencies are planning to use existing automated capabilities, many others are currently planning procurements to support present and future IRM requirements.

Agency plans emphasize the establishment of a baseline set of requirements from which current and future plans can be developed. Procurements which have been in process will be continued, and efforts to integrate those previously planned procurements with new requirements and newly planned technologies will be initiated. The need for numerous internal and external reports and associated paperwork will be evaluated with an eye toward reducing the administrative burden on the users of USDA services, internal and/or external.

FY 85: The anticipated improvements during FY 85

will bring: an expansion in the depth and range of automation within the Department; the identification of local and long-haul telecommunication requirements; and refinement of IRM control functions. As the capabilities available through automation become more integral to Departmental and agency operations, usage of mini- and microcomputers will increase, providing expanded capabilities in word/data processing, data base management, and general office automation. Agencies will also be looking to their future requirements for facsimile, electronic mail, tele/video-conferencing, expanded communications, computer modeling and simulations, and so forth.

In addition, agencies will continue to streamline agency and office administrative and management procedures. Methods to further reduce the paperwork burden will be implemented, report formats will be redesigned, and more IRM management control processes will evolve.

FY 86: Full implementation and utilization of many large automated systems developed during FY 84 and FY 85 will occur in FY 86. As planned expansion of computer-based automation is completed, emphasis will shift to acquiring telecommunications facilities, primarily through DEPNET services. Much of the increased demand for communications will stem from agency implementation of distributed processing systems, shared data base applications, and administrative support applications. The Department will continue the phased implementation of DEPNET, monitoring the efforts of the service contractor, coordinating agency requirements for DEPNET support, and implementing Departmental Computer Centers' interfaces to support the growing end user community. Central repositories of frequently used information will be available for Departmentwide use through the Departmental Information Locator System. The information center service at the Departmental Computer Centers will be operational.

FY 87: Many more systems which were procured and/or developed during FY 85 and FY 86 will become operational. Current requirements will be reexamined in light of the availability of new IRM technologies, such as advanced data base management systems, improved data storage devices, and advanced office automation complexes, to determine which of these IRM tools should be acquired and installed. The Department and agencies will continue their efforts to

reduce and control the paperwork burdens on the public.

Examples of emerging IRM technologies planned for use by the agencies during this timeframe are:

- Improved software packages;
- Advanced data storage and retrieval;
- Third-generation PBXs; and
- Improved security.

FY 88: Long before FY 88 arrives, new IRM plans will have been formulated — several times. But for the purposes here, a look at where the FY 84-88 plans might have taken USDA by this time is in order.

Most, if not all, of the planned systems and applications will be fully operational; some will already be undergoing new enhancements. The thousands of USDA field offices, some overseas, that were targeted for automation, will be automated. Agency and Departmental administrative systems will be sharing data and communicating with one another. Based on successful implementation of its plans, the Department and its agencies will be better able to perform the Department's work through use of IRM technologies coupled with improved management practices in the IRM arena.

4.3 Alternate Scenarios

To complete this future outlook, three scenarios are laid out here. To set the scene: it is early in FY 90 at USDA; the FY 89 planning cycle and the USDA long-range IRM plan for FY 90-94 has just been completed. The plan recounts the evolutionary history of IRM at USDA for the FY 84-88 time period; but that history could have followed any one of many alternative paths. Scenario 1 and 2 describe, in brief, two such possible paths. Scenario 1 assumes that USDA's IRM evolution proceeded essentially as planned. Scenario 2 is based on the well-known adage that "nothing ever goes according to plan". It traces one possible unfolding of an alternate future for IRM at USDA.

These paths meet, in Scenario 3, during the FY 89 planning cycle. This scenario touches briefly on the IRM technological environment envisioned for the

decade of the 1990's that would influence the Department's future long-range IRM plans.

Scenario 1 (According to plans): "The years FY 84 through 87 were expansive ones for Agriculture's IRM program. Much to the delight of the computer vendors in the market place, several RFP's for several thousand small scale and several hundred mid-scale computer systems were issued by USDA agencies in FY 84 and 85. Since no one vendor could deliver the combined quantities, not all vendors bid on all the individual RFP's. Several different brands were selected through the competitive procurement process, with deliveries made in FY 85 through FY 87.

"The FCCC and KCCC telecommunications enhancements (first and second phase) were completed in late FY 87 in time to service new interactive traffic from many of the USDA field offices. More secondary storage for all three DCC's was badly needed to handle new data bases and data input from the field, as the volume of data far exceeded anyone's estimates. With some painful delays, new disk space was finally acquired.

"New local area networks began to go operational in FY 86, with the bulk of them cutting in over the next two years. Coordination of DEPNET capabilities with agency requirements for long-haul traffic got off to a slow start, but then proceeded smoothly. DEPNET began using satellite transmission early in 1987 for some legs of the network. This was essentially transparent to its USDA users.

"In mid 1987, the first phase of the Agriculture Washington Area Telecommunications System (AWATS), went on the air, providing data and voice carriers for the Washington D.C. Metropolitan area. Some of the agencies opted not to cut over to this shared communication system because they already had operational systems of their own by then.

"Agency application development paralleled the delivery schedule of new computer/communications in the field offices. The Departmental Systems Review Board conditionally approved agency administrative systems designs submitted to it in FY 85 and 86; the condition being that each agency provide for retrofitting interfaces to the NFC central administrative systems when the interfaces were defined, which they were late

in FY 87. Most agency administrative systems were operational the following year.

"By FY 88 the USDA had assembled, piece by piece and level by level, a hierarchical network of various sizes and kinds of computers, linked via data communications to form an elementary distributed processing environment. The system was rudimentary in that there was little to no connectivity between agencies; and within an agency connectivity (i.e. data transmission) was high, but inter-processing between the agency computers was not yet implemented. New five-year plans in FY 88 would be concerned with that.

"One other thing of note transpired in the FY 84-88 period. Through planned training programs, program managers, technical managers and specialists, and the general support staff were all given the opportunity to learn about the new technologies and special management techniques in the IRM field. Interdisciplinary communications and cooperation showed a marked improvement at USDA because of this effort."

"On balance, most of FY 87 and FY 88 was a period of entrenchment for USDA as agency personnel, both in national headquarters and field offices, learned to adapt to use of new IRM technologies in their day-to-day operations. Of the many impediments to the use of small computers, about half were a result of employee resistance to change; the other half a result of disappointing performance of the machines themselves. . . ."

Scenario 2 (Some adverse times): "In FY 84, much progress was made. By FY 85, several agencies were preparing, or had released, RFP's for thousands of small-to-mid scale computers targeted for field offices. Then came the big budget crunch. Severe budget cuts and reductions in personnel ceilings for FY 86 and 87 led to a drastic change in the Department's plans. Some agencies had to stretch out delivery dates an extra year or two; others simply halted their procurements — for the duration.

"Nevertheless, by FY 87 a few agencies had managed to automate many of their county offices and some state offices; they were even able to go ahead with development of some high priority program applications. The rest of the USDA agencies waited—in a holding pattern. Lacking their new computers,

most agencies had to delay development of internal administrative systems; the good news was that the Department defined, that year, the interactive interfaces to the centralized Departmental systems so that when agencies did begin to move forward on their own, the agency part of the interface could be incorporated without retrofit. But, by the beginning of FY 88 only a handful of agencies had operational administrative systems.

"Telecommunications fared no better. Many agencies abandoned their plans to erect LAN's; the Department slipped AWATS schedules twice, a year each time, for lack of funds. Little or no improvement in Washington Metropolitan area communications was forthcoming in the interim. "Band aid" solutions had to be employed to keep the minimum communications going. The wiring in the South Building grew more and more tangled.

"By the end of the planning period, FY 88, perhaps a third of the planned accomplishments were realized. Many USDA agencies did not have the automated systems nor program support functions they had planned. But there were some significant milestones. Those agencies able to automate their field offices had learned much about the small computers, vintage 1984 and 1985. They shared their experiences, some good, some not so good, with agencies waiting on the sidelines. Of the many problems cited, about half were laid to employee resistance to change; the rest were laid to disappointing performance of the machines, themselves. . . .:

Scenario 3 (Alternate paths meet): "By FY 89, the period of entrenchment was over, and USDA and its agencies were once again planning in an expansive mode. By this time, USDA had studied the important strategic area of "information management" and had developed Departmentwide policies, strategies, and standards that would enhance the Department's ability to manage its automated information for some time to come. Out of this study, a practical Departmentwide computer network architecture, based on information flow, evolved. It would provide the blueprints with which an integrated, USDA computer network capable of cooperative processing could be built.

"Of equal importance to the Department, the problems and headaches associated with the "first generation" small computers had been recounted. As the

Department prepared to acquire second generation end user machines, its past experiences helped to guide the planning process. For the record, the major problems were:

- Poor reliability of hardware plus long turnaround time for repairs;
- Proprietary software that did not perform as advertised plus long turnaround time for fixes; hardware/software vendors 'finger pointing' delayed the process;
- Maintaining application libraries on floppy disks proved to be almost unmanageable;
- Serious fragmentation of local data bases due to space limitations on floppies or undersized hard disks;
- Most troublesome of all, poor quality, unreliable data communications between remote field offices and state or central host computers.

"On the brighter side, by the time of the FY 89 planning cycle, industry had brought to the market place some exciting new IRM tools; those of particular interest to USDA agencies were:

Computers: Small, end user computers are now ruggedized and fully redundant. Most are available in multi-user configurations. Proprietary software is now "firmware", fabricated on chips, as are most popular operating systems. Chip-based data base management systems are available for multi-level computers from micros to minis to mainframes, that feature global data directories, and support distributed DBMS functions. Chip-based inter-process controllers are also available for these same multi-levels for automatic cooperative processing. All at less than \$2000 (slightly more for multi-user versions).

Accessories: Fast, quiet, high quality ink jet printers are available on even the smallest machines, offer color graphics and companion photocomposition chips for an under \$1000 price tag. For about the same price, where speed is of the essence and color is not, laser printers are available for even the small end user computers that print in relative silence ten or more pages per minute.

"Floppy disks are out, except for home computer use. They are replaced by high-density optical disks; automatic backup is supported by most operating systems.

Expert Systems: Many USDA agencies are evaluating potential use of knowledge-based and/or expert systems, especially those agencies involved in highly-specialized scientific research. Prices range from \$15,000 to \$50,000 depending on the area of speciality.

"But there is one type of expert system soon to be available that is of interest to all the agencies, and to the world at large. The reason that so little had been done in recent years in designing better programming languages was because industry had focused on the development of expert systems whose "expertise" was *programming*.

"Soon, USDA system developers will work in an interactive mode with their "expert programmer" partners; together they will develop software and/or firmware for many different target computers, whose basic machine operations are stored for easy recall by the expert. The ultimate, to date, in man-machine symbiosis.

"By reducing, by orders of magnitude, the time and costs for system development, and by producing

machine code that is highly efficient, reliable, and error-free, these expert programmers are expected to completely revolutionize not only the system development process but the use of computers, themselves.

Communications: The advancements in this area are equally significant to USDA. With the much heralded advent in the early 1990's of integrated, cellular/satellite communications, most of USDA communications problems would be solved. Wireless cellular systems would obviate the need to ever hardwire LAN's in the South Building, or any other USDA site. The combined cellular/satellite systems for long haul services are expected to eliminate the poor quality of communications to and from the field offices that plagued USDA in the past.

Speech Recognition: The long awaited ability of machines to understand the spoken word in free form still eludes the industry—at least in the United States. The fact that the Japanese have succeeded, where the English-speaking world has not, has more to do with the basic structure of the respective languages than U.S. technical expertise, per se. . . ."

This brings to an end the future outlook. While it is difficult to turn from the potentially exciting future of the 1990's, the time has come to examine in more detail the current USDA plans for FY 84 - 88.

5. Long-Range IRM Planning Framework

- The foundation for objectives

The USDA long-range IRM planning process conceptually defines a planning framework as being comprised of the IRM mission plus three basic planning components: planning assumptions, goals, and goal-related strategies. These components are to be used by each planning organization to define the scope, focus, and direction for its IRM efforts, and to establish a basis for its objectives for the IRM plan (Reference Section 6).

The Departmental framework is developed by OIRM in the first part of each planning cycle; it is incorporated in the Departmental planning guidance and distributed to all USDA agencies. The FY 83 version of the Departmental planning framework is presented in Section 5.1.

During the agency planning period, agencies construct their own framework, consistent with the Department's, and/or adopt some or all of the Departmental components, as is. A summary of the approach used by USDA agencies in the FY 83 planning cycle is given in Section 5.2.

5.1 Departmental IRM Planning Framework

Planning Assumptions. These assumptions state the Departmental position and direction for the issues they address. The scope and focus of these assumptions are the USDA environment over the next five years or so. Collectively, they deal with IRM policy, management, and technology issues that may be important to USDA agencies in developing their long-range IRM plans. The assumptions for the FY 83 planning cycle are:

- The USDA Senior Official for IRM will issue IRM policy for the Department.
- OIRM will develop policy statements and coordinate policy issues by the USDA Senior Official for IRM.
- OIRM will manage Departmentwide long-range IRM planning.
- Funds and personnel resources for implementing agency IRM programs will come from agency budgets that are likely to decrease each year. There will be no Departmental funds available for agency use.
- OIRM will continue to:
 - Manage and operate the Departmental Computer Centers;
 - Provide telecommunications services for the Department through DEPNET that can be utilized by any computer and/or terminal with a standard interface;
 - Provide, as resources permit, IRM consulting and other services to the Department's staff offices and agencies.
- OIRM will assist agencies in acquiring telecommunications that cannot be supported through DEPNET.
- All agencies are participants in the Departmentwide IRM planning process.
- Agencies will continue to be the primary source for providing information management resources for the accomplishment of agency missions.
- Each agency will develop and implement its own long-range IRM plans consistent with the Departmental Regulation on long-range IRM planning and with the direction of the USDA Long-Range IRM Plans. Agency IRM plans will be designed to support the agency program/mission-oriented plans and the USDA Secretary's goals and objectives.
- On a continuing basis, OIRM will assess the information resources technologies of general interest to USDA agencies. A current assessment will be distributed annually as part of Departmental planning guidance.
- There will be from time to time, IRM policy initiatives issued by OMB and/or other oversight agencies that may have a significant impact on the USDA's IRM plans.
- The National Finance Center (NFC) will move toward offering interactive access to Departmental data bases in a timely manner.
- Agency utilization of computers will continue to increase with the demand being met by a

combination of minicomputers, microcomputers, Departmental Computer Centers and Computer Service vendors.

- The USDA will have acquired in excess of 10,000 microcomputers and/or minicomputers with communications capability by 1987.
- The Departmental Computer Centers will begin converting from time-sharing service bureaus to information centers.*
- Office automation in the Department will extend beyond the word processing (WP) machines to integrated WP and data processing systems that will provide a means for automating many office functions and communicating with other host computers in the Department.
- There may be a lag between the availability of new technology from industry and the ability of USDA management to accept and incorporate the technology; this potential lag should be factored into the long-range IRM plans.
- The Department will foster and encourage the improvement of its Departmentwide electronic mail capability.
- The Department will support agency use of a variety of information processing systems, from small to large, that are appropriate to the organizational structure and consistent with the agency's management philosophy.
- For the purpose of IRM planning, and in the event of Departmental/agency conflicts, Departmentwide benefits have priority over the benefits of individual agencies.
- To the extent that USDA continues to maintain obsolete hardware, software, or manual systems, these systems will continue to consume USDA resources at other than an optimum rate.

*An information center is here defined to be a multi-user computer facility which, in addition to providing traditional computational and data processing services, offers hardware and software capabilities that permit users to enter and retrieve information and engage in interactive problem solving directly with minimum assistance from computer professionals.

Departmental IRM Goals. These goals establish the thrust and direction of IRM efforts for the Department as a whole. They are supportive of, and consistent with, the USDA IRM mission, Public Law 96-511, and the Department's internal IRM requirements as they existed in FY 83. These goals will be reviewed each subsequent planning year; they may be modified or deleted, or new goals may be added, in response to changing requirements. The initial set of Departmental goals are:

Goal ID	Goal Statements
DG-1	Minimize the USDA's paperwork burden for individuals, business, and federal, state, and local governments.
DG-2	Increase productivity through effective and efficient management and utilization of information resources and technology.
DG-3	Minimize the collection and retention of redundant and/or unneeded information.
DG-4	Enhance the inter- and intra- Departmental availability of information resources.
DG-5	Enhance the integrity, security, and audibility of information and information systems.
DG-6	Decrease the cost to USDA collecting and processing information and increase its usefulness.
DG-7	Acquire and utilize automated information processing and telecommunication technologies to improve service delivery and program management.
DG-8	Improve the efficiency and effectiveness of voice and data communications.
DG-9	Increase IRM professionalism and general awareness of sound information resources management practices.

Goal-Related Strategies. These were developed by the Department as suggested strategies, not mandatory. They were not to preclude any agency

from developing and using other strategies to produce or assist in producing desired results.

Each of the nine Departmental IRM Goals (defined in FY 83) are restated below along with the goal-related strategies suggested by the Department; the agency "users" of each strategy, as indicated by agency plans, are identified.

DG-1 - Minimize the USDA's Paperwork Burden for Individuals, Businesses, and Federal, State, and Local Governments.

Strategy - Reducing the paperwork burden by eliminating unnecessary information reporting and collection.

(Users: APHIS, ASCS, AMS, ARS, OIG, REA, OIRM, OO, REA)

Periodically, the USDA and other Cabinet-level Departments and agencies will be asked by OMB to submit their plans for reducing the paperwork burden on the public. In the past OMB has called for a 15% 1982 and a 10% 1983 reduction throughout the Federal government.

In anticipation of future calls from OMB, USDA agencies should, on an on-going basis, assess their individual paperwork burdens and develop a methodology for further reductions. An objective defining the agency approach can be included in the agency long-range IRM plan where applicable. This methodology should ensure compliance with the requirements of the Federal Information Locator System.

DG-2 - Increase Productivity Through Effective and Efficient Management and Utilization of Information Resources and Technology.

Strategy 1 - Using a systematic means of managing productivity improvement.

(Users: APHIS, FS)

This strategy is best illustrated by a scenario. Management of productivity improvement begins within an agency with information gathering. This includes activities such as attending workshops, selective reading, and consulting with productivity experts and other USDA managers with experience in the field.

Then an area for potential productivity improvement is selected for testing.

The agency then identifies some internal unit to participate in the test. It evaluates and acquires, on a limited basis, the particular new technology or new procedures selected for testing. Productivity measurements for current procedures are made. New systems are installed and used and new measurements are made and compared with the old way of doing things.

The results (if positive) are made available to agency management to determine the applicability to other parts of the organization. Results can also be shared with other USDA agencies.

Strategy 2 - Improving productivity through effective management of information resources within the agencies.

(Users: APHIS, NFC, ASCS, ACS, OP, SRS, SCS, OICD, AMS, HNIS, REA)

Each agency can examine its internal operations to identify opportunities for improving productivity on a year-by-year basis then develop a productivity improvement objective and incorporate it into its long-range IRM plan.

DG-3 - Minimize the Collection and Retention of Redundant and/or Unneeded Information.

Strategy 1 - Developing an inventory of all USDA information collection activities.

(User: ERS)

This strategy might involve acquiring from each agency an abstract for each information collection activity. The abstracts could then be utilized to develop an "information activity" data bank. An agency anticipating initiating an information collection effort can query the bank to determine if it is a duplicate or redundant effort.

Strategy 2 - Combining intra-agency and inter-agency information efforts.

(User: HNIS)

Different agencies may request information, utilizing various methodologies, at different times, from the

same sources. These sources may be universities, businesses, the public, or the environment (moisture sampling, snow fall measurement, etc.). An analysis of these activities (utilizing the inventory developed as a result of strategy 1) could indicate if there are duplicate or redundant efforts being conducted and/or which efforts can be combined.

DG-4 - Enhance the Inter- and Intra-Departmental Availability of Information Resources.

Strategy 1 - Establishing an information locator system to house information about the Department's IRM resources.

(Users: APHIS, FAS, REA, ERS, OIRM)

This system could make information available to technical and/or non-technical managers on, for example, the Department's hardware, software, and data bases of global interest. If linked to systems external to the Department, this system would enhance both intra and inter-Departmental availability of information.

Strategy 2 - Establishing agency-shared data bases.

(Users: NFC, OP, SRS, AMS, OBPA, NAL, FAS, ASCS, REA, ERS)

Information that is collected and stored electronically by one agency can be made readily available to other agencies through data bases designed for shared access. Shared data bases with multiple contributing agencies could substantially increase the availability of information throughout the Department.

Strategy 3 - Providing non-technical end users with easy access to the Department's host computers.

(Users: ASCS, NFC, OIRM, OP, AMS, FAS)

Large-scale host computers, such as employed by the Departmental Computer Centers, are not particularly "friendly" to the non-technical, non-programmer user. The new personal computers have, on the other hand, been designed with just such non-technical end users in mind. If a user-friendly interface were added to the large systems, the information they house would

become more readily available to a much larger number of the Department's staff.

DG-5 - Enhance the Integrity, Security, and Auditability of Information and Information Systems.

Strategy 1 - Incorporating effective safeguards into existing application systems.

(User: APHIS, NFC)

Agencies can evaluate present safeguards in operational systems and upgrade those systems wherein information is inadequately protected. Any new enhancements designed to provide interactive input and/or access to the system should include the necessary protective mechanisms.

Strategy 2 - Incorporating effective protection in the basic design of all new applications.

(User: NFC)

By building integrity, security, and auditability features into the design of new applications, agencies can minimize the cost and the risk of loss at the outset.

DG-6 - Decrease the Cost to USDA of Collecting and Processing Information and Increase Its Usefulness.

Strategy 1 - Using information collection cost/benefit analysis procedures.

By developing and utilizing cost/benefit analysis, agencies can increase their capability to determine the effectiveness and efficiency of any information collection and processing effort before its implementation.

Strategy 2 - Adhering to the standards set forth for information collection, processing and communication to control cost.

(Users: AMS)

Agencies can optimize the cost of information by: using common information collection techniques;

combining agency information collection efforts; reducing the collection and retention of redundant information; improving the availability of information.

Strategy 3 - Improving the agencies' ability to reliably evaluate the benefits associated with user satisfaction.

As is often the case in cost/benefit analysis, costs are more easily determined and quantified than benefits. This situation pertains to USDA's information collections. This strategy proposes the development of a methodology for measuring client (local and state governments, the farmer and other public groups, plus agency management) satisfaction quantitatively and/or qualitatively. An improved methodology could lead to more meaningful cost/benefit analysis in the information collection area.

DG-7 - Establish a Framework in Which Automated Information Processing and Telecommunication Technologies Are Acquired and Used to Improve Service Delivery and Management of Programs.

Strategy 1 - Maintaining an on-going research effort into the current state-of-the-art in these technologies.

(Users: FS, FAS)

Each agency can allocate part of its staff resources, proportionate to the potential and actual use of these technologies within the agency, for the express purpose of tracking and evaluating emerging technology. These staff members would also evaluate current agency inventories for potential obsolescence and keep abreast of new technology being used by other agencies within the Department.

Strategy 2 - Identifying resistance and creating receptivity to information resources technology.

(User: APHIS)

Agency efforts to introduce innovative methods and IRM technology may be met with resistance within affected organizational units. It may be necessary, in some cases, to develop an approach to counteract anticipated resistance by creating receptivity to the technology in advance of its introduction.

DG-8 - Improve the Efficiency and Effectiveness of Voice and Data Communications.

Strategy 1 - Improving the efficiency and effectiveness of voice communications by competitive procurement.

(Users: APHIS, OIG, OIRM)

The Department can explore the possibility of obtaining voice communication services by competitive procurement with the intent to improve voice communication services and at the same time reduce the per unit cost.

Strategy 2 - Improving the efficiency and effectiveness of data communications by acquiring "state of the art" communication services.

(Users: APHIS, FAS, FS, ERS, OGPA, OIRM)

The Department can acquire improved communication services that will effectively lower the current costs of transmitting data. The improved services may come as a result of changes to software, hardware, or as a result of acquiring services from a data communication vendor.

Strategy 3 - Working with the Department to determine the best communication alternatives.

(User: ORIM)

Agencies would first make an assessment of new and/or changing communication requirements. Based on these requirements, viable communication alternatives can be evaluated and the "best" one selected by a team of Agency/OIRM communications specialists.

DG-9 - Increase IRM Professionalism and General Awareness of Sound Information Resources Management Practices.

Strategy 1 - Improving awareness of sound IRM practices by developing cohesive policy directives.

(User: OIRM)

Policy directives can be developed and issued by the Department and each agency. This policy can embrace all aspects of management that are

concerned with the acquisition, processing, communication and retention of information.

Strategy 2 - Improving IRM professionalism through education.

(Users: OICD, OIRM)

At every level within the organization, managers and non-managers should become experts in IRM principles and practices. Each agency should evaluate the requirements of its IRM staff for education and training then develop an educational and training process that will meet these requirements.

5.2 Agency Planning Frameworks

Most of the USDA agencies elected to use, implicitly or explicitly, the Departmental planning assumptions and strategies. Many, however defined their own set of agency goals that were:

- Wholly consistent with and supportive of Departmental IRM goals;
- Particularized to the agency and its programs;
- Fully supportive of the Secretary's goals for Agriculture.

Some agencies, particularly the smaller ones, adopted some or all of the Departmental IRM goals, verbatim. Whatever the source, agency IRM goals clearly reflect both Departmental direction *and* agency-specific IRM support requirements.

To obtain some measure of consistency with the Departmental focus and direction, as expressed in the Departmental IRM planning framework, some comparisons were made between Departmental and agency goals and strategies.

Goal Relationships

Agency IRM goals were found to be in aggregate compliance with Departmental IRM goals; that is, the agency goals defined in each agency plan contribute to those Departmental goals appropriate to the scope of the agency mission and IRM responsibility. There were no examples of inconsistency or counter direction, agency versus Department. Through agency goals and objectives, USDA agencies support of Departmental IRM goals is as follows:

#	Departmental Goal Subject	Percentage of Agencies Supporting
DG-1	Minimize paperwork	21%
DG-2	Increase productivity	54%
DG-3	Minimize unneeded data collection	23%
DG-4	Enhance information availability	30%
DG-5	Increase information system security/ auditability	14%
DG-6	Decrease IRM costs	21%
DG-7	Acquire/utilize IRM technologies	39%
DG-8	Improve voice/data communications	10%
DG-9	Increase IRM awareness	4%

Strategies Used

Each of the agency plans was examined to determine the relationship between the agency IRM strategies and the Departmental IRM strategies listed in section 5.1. In some cases, use of Departmental strategies was explicitly indicated in agency plans. Where such indications were not present, an examination of agency objectives was made to determine which implicit strategies were being followed:

All but two of the Departmental strategies were used by one or more USDA agencies. The most heavily employed Departmental IRM strategies are:

- Eliminating unnecessary information reporting and collection (9 agencies);
- Improving productivity through management (11 agencies);
- Establishing agency-shared data bases (10 agencies);
- Providing non-technical end users with easy access to the Department's host computers (6 agencies);
- Acquiring state-of-the-art communications services (6 agencies).

Many agencies explicitly defined, or implicitly used, strategies not found in the Departmental framework. But, because all of the strategies support the Departmental IRM goals, no inconsistencies in the overall Departmentwide direction were found in their plans at the strategy level. Thus, the theoretical concept of a Departmental IRM planning framework to provide cohesiveness to Departmentwide planning proved, in fact, to be valid, in actual practice.

6. Long-Range IRM Objectives

- The work to be done

The planning components addressed in Section 5 were used to lay the foundation and build a framework for the long-range IRM objectives presented here.

Objectives are the real substance of a strategic plan; defining them is the most difficult and demanding part of long-range planning. But the potential benefits to any organization of a strong set of objectives can be significant and far-reaching because through them an organization defines what has to be done, and when, in order to move towards its ultimate goals. It is also through its objectives that the organization—its management and staff—make the commitments of time and resources needed to meet the objectives mutually agreed upon.

More than any other planning component, these long-range IRM objectives are subject to change, and at any time. Objectives are time-based and schedules can change for many reasons; they involve a commitment of staff and dollar resources that may not be available as planned; and new technologies may dictate revision of objective strategies. USDA planning organizations are free to make ad hoc changes to their objectives or other parts of their plans. But for the purposes of the Departmental plan, agency plans are essentially frozen at the end of the agency planning period each cycle. Thus, this USDA plan is a "snapshot" of Departmentwide planning as it stood in September 1983; and these objectives represent the USDA's first collective efforts at defining long-range IRM objectives.

6.1 Departmental IRM Objectives

The Departmental objective statements in this section are IRM initiatives, identified early in FY 83 by USDA IRM managers as requiring Departmental action and support (FY 84-88), and whose ultimate implementation will have a Departmentwide impact. With each statement, the agency with lead responsibility is shown in parenthesis.

An insert at the end of Section 6 contains the fully-defined version of the same objectives including: objective statement; background; approach; major milestones, with start and completion dates and responsible parties; resource requirements; and constraints, conditions, and assumptions.

During the FY 83 planning period, the designated agencies translated and expanded the Departmental initiatives into fully-defined objectives; they will implement the objectives, as well, when the time comes. A Departmental objective may implicitly involve many of the Department's agencies, even though they are not explicitly designated as "responsible". For example, objective D-1 will establish a Departmental Information Locator System. Agencies will be expected to supply the information to be housed by the system.

Departmental IRM Objective Statements:

- D-1: To establish and maintain a Departmental Information Locator System with inventory components of: major information systems and data bases, forms, reports, directives, equipment, and common-use software, by October 1984 with continuing maintenance. (OIRM)
- D-2: Improve the techniques used by agencies to assess the paperwork burden on individuals, businesses and other private institutions, and state and local governments in order to eliminate unnecessary reporting burdens through September 1988. (OIRM)

- D-3: Improve the techniques used by agencies to assess the paperwork burden placed on any Federal respondent, within or external to the Department, in order to eliminate unnecessary burden by the end of FY 1985. (OIRM)
- D-4: To develop a methodology for determining the practical utility of collecting, processing, and retaining data by November 1984. (OIRM)
- D-5: Provide a Departmentwide data communications utility through September 1991. (OIRM)
- D-6: To develop a policy, methodology, and service for dissemination of information outside USDA, meeting requirements for perishable data by March 1984. (OIRM)
- D-7: Establish an Information Technology Center to assist USDA employees in end user computing. (OIRM) (Completed May 1983).
- D-8: Reexamine and enhance Departmentwide automated Management systems. (OFM)
- D-9: The previous D-8 and D-9 were combined to form the current D-8.
- D-10: To improve and expand the Executive Support Center to provide current information to senior policy officials of the Department by April 1984 and on a continuing basis. (OIRM)
- D-11: To establish Departmental strategies, standards, and guidelines for the acquisition and use of end user computers in USDA's distributed processing environment by October 1984. (OIRM)
- D-12: Revise current directives to define and reflect cohesive, up-to-date policy and procedures for IRM by January 1984. (OIRM)
- D-13: To implement an IRM management control process within OIRM designed to promote effective and efficient use of information resources in the Department by September 1984. (OIRM)
- D-14: Develop an inventory of USDA information collection activities and a methodology to accurately determine the cost of collecting, processing and retaining information. (OIRM - this objective was combined with D-1 and D-4)
- D-15: To develop and implement an Information Center capability at each of the Departmental Computer Centers by FY 86. (OIRM)
- D-16: Develop policy and procedures to incorporate records management principles into the process of handling and storing information electronically by the end of fiscal year 1986. (OIRM)

6.2 Agency IRM Objectives

Most of the agency objectives involve improved methods for gathering, sharing, retrieving, manipulating, sharing and/or distributing information. A large number deal

with program and/or mission-specific applications unique to the agency. Nevertheless, IRM technologies to be used are quite similar, e.g. small to medium scale computers; office automation combined with ADP functions, telecommunications, short and/or long haul.

Many agency objectives are aimed at improving internal administrative functions through automation. The Departmental Systems Review Board (established in 1983) is responsible for coordination of the design architecture of agency administrative applications with that of the Departmental administrative systems slated for reevaluation and redesign (Reference Departmental Objective D-8). Integrated management teams — agency and review board — will be key to successful coordination.

The fully-defined agency objectives are documented in agency plans and are not included here. Collectively, USDA agencies defined over three hundred IRM objectives in this first planning cycle. This is a major accomplishment, in and of itself. But the scope and variety of the subjects addressed, and the level of effort their implementation will represent, are even more impressive.

In the list below, each agency is identified along with the subject matter of its objectives, and an indication as to whether the objectives are long-range (LR), meaning two or more years, or short-range (SR), less than two.

Agency Objective Subject Matter

ACS Select micro hardware software (SR)
Train staff (LR)

AMS Share resources and technologies (LR)
Seek most appropriate solution to hardware software (LR)
Utilize DBMS technologies (LR)
Explore new technologies to reduce manual-intensive recordkeeping (LR)

ARS Development of scientific ADP applications (LR)
Laboratory automation (LR)
Improve planning and control over automation resource acquisitions (LR)
Develop and implement a process for ADP facilities and procurement planning (LR)
Evaluate and assist in ARS telecommunication modernization (LR)
Develop automated ARS program management and administration systems (LR)
Plan, lead, support the ARS automated network (LR)
Improve access and control of ADP systems (LR)
Conduct technology assessment in: mail management, office automation, telecommunications, personal computers, and recommend appropriate actions (LR)
Establish policies in the areas noted above (LR)
Educate the personnel about IRM technologies (LR)

APHIS Staff development (SR)
User contact strategy (SR)
Conduct study to reduce paperwork (LR)

	<p>Security procedure guidelines (SR)</p> <p>Prepare proposal for office systems support acquisition (SR)</p> <p>Develop selection process for telecommunications system (SR)</p>
ASCS	<p>Review forms and recordkeeping regulations (SR)</p> <p>Install DP systems (LR)</p> <p>Create a technology center for Joint ASCS/FAS (LR)</p> <p>Establish technology center for ASCS (SR)</p> <p>Reduce volume of preprinted forms (LR)</p> <p>Replace Grain and Commodities inventory systems (LR)</p> <p>Implement office automation and DP integration (LR)</p>
CSRS	<p>Develop ADP applications (LR)</p> <p>Improve acquisition planning of automated resources (LR)</p> <p>Design, develop, and implement office automation plan (LR)</p> <p>Encourage automation to speed the input of the Current Research Information System (CRIS)</p> <p>(LR) Establish policies on IRM needs and reports (LR)</p> <p>Support DBMS utilization (LR)</p> <p>Collect, process, and distribute technical management information (LR)</p>
EMS	<p>Participate in NFC personnel system (SR)</p> <p>Internal Fund Control System (IFCS) and Control Agreements Status System (CASS) conversion from a batch to an on-line system and decentralize data input (SR)</p>
ERS	<p>Management Policy:</p> <p>Determine management policy (SR)</p> <p>Development and implement improved MIS (LR)</p> <p>Training (LR)</p> <p>Information management planning (LR)</p> <p>DBMS:</p> <p>Agriculture Research Information for Economic Studies (ARIES) implementation (LR)</p> <p>Compile automated directory (SR)</p> <p>Improve file management (SR)</p> <p>Improve data acquisition (SR)</p> <p>Improve cross sectional and hierarchical data (SR)</p> <p>Develop quality control program (LR)</p> <p>Hardware/Telecommunications:</p> <p>Improve computer system configuration (SR)</p> <p>Provide integrated workstation access (LR)</p> <p>Identify new office requirements (SR)</p> <p>Provide link information support to field assignments (SR)</p> <p>Information Dissemination:</p> <p>Plan for electronic dissemination (LR)</p> <p>Develop and implement integrated publications process (LR)</p> <p>Identify and acquire graphic systems (SR)</p> <p>Provide interactive electronics information access (LR)</p>

FmHA Convert loan accounting system to Kansas City Computer Center (LR)
 Develop multi-family accounting system (LR)
 Develop office automation and computer support (LR)
 Develop Program Management Information Systems (LR)
 Manage FmHA Information Collection Budget (LR)
 Minimize collection of redundant information (LR)
 Develop financial analysis and administration management support (SR)
 Monitor voice/data transmit costs (LR)
 Maintain and enhance operational automated information systems (LR)
 Establish the environment for IRM (LR)

FCIC Improve Office Information System (LR)
 Improve productivity by training and procedures (LR)
 Improve data sharing procedures (LR)
 Improve microcomputer utilization (LR)
 Acquire microcomputers (LR)
 Improve present ADP system (LR)
 Implement Data Automation Division (DAD) staffing objectives (SR)
 Improve statistical reporting systems (SR)
 Expand on-line and inquiry capabilities (SR)
 Test the feasibility of data entry at the source (SR)

FGIS Produce additional automated ADP/WP functions and microcomputers, data communications networks (LR)
 Reduce paperwork (SR)

FNS Improve office automation (SR)
 Automated field offices (SR)
 Make greater use of computer capacity (LR)
 Reduce paperwork (SR)

FSIS* Increase management participation in IRM technologies
 Develop new and modified data bases and maintain, control existing data base
 Provide FSIS software needs
 Provide a telecommunication network
 Improve IRM security
 Implement the automated meat and poultry inspection resource information system
 Develop the microbiological and residue computer information system
 Upgrade the Automatic Import Information System (AIIS)
 Train FSIS personnel to use the terminals, microprocessor and data bases

FAS Develop a compliance review and evaluation system (LR)
 Acquire information processing equipment (LR)
 Implement an integrated FAS data base (SR)
 Document storage and retrieval (LR)
 Enhance FAS remote sensing (SR)

* No milestones/completion dates given.

	<p>Design and develop a foreign trade processing system (LR) Develop and implement an export credit automated system (SR) Enhance Global Economic Data Exchange (GEDE) system (LR) Determine the feasibility of:</p> <ol style="list-style-type: none"> 1. European community regulation system (SR) 2. Tariff and trade barrier system (LR) <p>Determine the feasibility of establishing library or information network for food and product standards (LR) Develop a microcomputer personnel management system (LR) Automate FAS office operation (LR) Implement a fund control system (SR) Enhance Production Supply and Demand (PS&D) system (LR) Provide ADP training for FAS personnel (LR) Develop international price system (SR)</p>
FS	<p>Reevaluate FS directive system (SR) Establish distributed processing capabilities and provide microcomputer technology and software needs and software conversions (LR) Improve telecommunications information flow and facilities (LR) Improve graphics facilities and graphics systems (LR) Develop the processes and the software for distributed data base management and computerized FS directives system (LR) Develop policy and procedures for forms and reports management and electronic filing (LR)</p>
HNIS	<p>Examine methods to increase productivity in computational facilities (SR) Minimize retention of redundant information (SR) IRM training (SR)</p>
NAL	<p>Lease and operate Current Awareness Literature (CAL) system (SR) Procure an integrated library system (SR) Develop capability to transfer information electronically among the computer systems (SR) Full text data base system capability development (SR) Provide non-bibliographic files on-line (SR)</p>
OBPA	<p>Install microcomputer and communication and analytical software (SR) Improve security for ADP equipment and data access (SR) Install electronic spreadsheet and graphics software (SR) Develop and install basic ADP models (SR) Improve record and data retention policies (LR) Consolidate regulatory and legislative tracking and coordination processes (SR) Acquire and install communication equipment and protocols; phase installation of office automation and applications hardware and software (SR) Annual budget reviews (LR) ADP training of OBPA personnel (SR)</p>
OEO	<p>Conduct a feasibility study to develop a computerized system for complaint processing (SR)</p>

	<p>Increase productivity by efficient management of information stored at NFC (SR) Minimize collection and retention of redundant information (SR)</p>
OFM	<p>Examine and enhance automated management systems (LR) Improve access to administrative management systems (LR) Acquire hardware/software (LR) Enhance central accounting system (LR) Expand office automation (SR) Enhance integrity, security, and auditability of information systems (LR) Enhance agency services and review systems (LR) Acquire and utilize telecommunications and information processing products and technologies (LR)</p>
OGPA	<p>Extend and expand electronic news dissemination service (SR) Satellite distribution use for Radio-TV materials (LR) Establish electronic cost accounting system (SR) Establish departmental teleconferencing center (SR) Increase printing and publishing effectiveness (SR) Install integrated information processing system (SR)</p>
OIRM	<p>Office of the Director: Implement OIRM's part of the USDA Reform 88 Action Plan (LR) Establish mainframe computing strategy (SR)</p> <p>Headquarters Divisions: Improve ADP Security (LR) Expand the Information Technology Center (SR) Plan and implement telecommunications system for D. C. Metro area (SR) Plan USDA-wide telecommunications systems (LR) Develop and implement demand forecasting and capacity management programs (LR)</p> <p>Departmental Computer Centers: Develop and implement data communications networking facility (SR) Take interim actions to improve data communications (SR) Develop and implement an information management system (LR) Procure ADP equipment (LR) Plan security strategy (LR) Provide ADP security to Centers' users (LR) Increase telecommunications capability (LR) Develop and implement telecommunications management system (SR) Implement Integrated Data Management System (IDMS) and supporting software (LR) Procure software for WCC (LR) Provide continuous, uninterrupted data processing services (LR) Provide reliable data communications service (LR)</p>
OIG	<p>Improve office automation (LR) Automate an administrative management system (LR)</p>

- Automate OIG's investigative indices and improved access to the National Crime Information Center (NCIC) and National Law Enforcement Telecommunications System (NLETS) (SR)
 - Utilize IRM technologies to improve investigative reporting (SR)
 - Utilize IRM technologies to improve OIG audit reporting (LR)
 - Utilize IRM technologies by the use of graphics (SR)
 - Use IRM technologies to prevent waste and fraud (LR)
 - Enhance availability of information and information resources (SR)
 - Enhance the integrity, auditability of information systems (LR)
 - Review ADP costs and products (LR)
 - Improve use of data communication (LR)
 - IRM training (SR)
 - Establish a two-way radio communications (SR)

- OICD** Integrate office automation by use of LAN (SR)
 - Implement electronic mail (SR)
 - Establish management information system (SR)
 - IRM training (SR)
 - Enhance administrative systems to support program objectives (SR)

- OO** Develop, coordinate and implement the Property Management Information System (PMIS) (SR)

- OP** Automate USDA's personnel management information system (SR)

- OSDBU** Assess IRM effectiveness and adequacy and develop a plan for implementation (SR)
 - Implement the plan (SR)

- OT** Develop a LAN (SR)
 - Develop a management information system (SR)

- P&SA** Review of regulations (SR)
 - Training for ADP utilization (SR)
 - Establish and maintain a distributed system (SR)
 - Procure portable computers (LR)

- REA** Automate paperwork management (SR) and train managers for paperwork management (LR)
 - Automate financial assistant activities (SR)
 - Require information processing hardware and software (LR)
 - Implement administrative information system (SR)
 - Enhance the borrower information system (SR)
 - Implement an integrated REA data base (SR)
 - Support USDA information locator system (SR)
 - Conduct IRM training session (SR)
 - Review agency forms (SR)
 - Review possible areas of waste and fraud (SR)

- SCS** SCS participation in high technology applications (SR)
 - Determine staffing needs (SR)

- Provide needed software to SCS (SR)
- Develop computer models (LR)
- Implement service-wide workload analysis (SR)
- Improve economic evaluation (LR)
- Plan development of data base systems (SR)
- Data base operation (SR) and data base maintenance (LR)
- ADP training (LR)
- Provide hardware/software for end-user processing capability (LR)
- Hardware acquired for SCS applications (LR)
- Establish SCS data communications capability (LR)
- Establish SCS office automation capability (SR)
- Improve efficiency (LR); form processing procedures (SR); report procedures (LR); and records management (LR)
- IRM training (LR)

SRS

- Define information standards (LR)
- Improved utilization of IRM technologies and resources (LR)
- Explore feasibility of electronic dissemination (LR)
- Use of administrative records (LR)
- Develop and implement an integrated survey program (LR)

6.3 Departmental Objectives FY 84 - 88 (Fully - Defined)

Objective D-1: Departmental Information Locator System

1. *Objective Statement:* To establish and maintain a Departmental Information Locator System with inventory components of: major information systems and data bases, forms, reports, directives, equipment, and common-use software, by October 1984 with continuing maintenance.
2. *Background:* The Paperwork Reduction Act of 1980 (PL. 96-511) requires all Departments and Agencies to carry out information management activities in an efficient, effective, and economical manner. Effective information resources management requires knowledge of available resources which will be provided by tools such as the Information Locator System. This system is also essential to facilitate software and data sharing.

This objective supports Departmental IRM goals 2, 3, 4, and 6.

3. *Approach:* The Information Locator System will be developed in phases, by major inventory component. Contractor support will be required for systems development. An interagency advisory panel will provide advice on any issues related to user requirements or design considerations during implementation. RED will coordinate with other OIRM divisions and GSA to establish interfaces between new inventories and the existing equipment inventories.

4. *Major Milestones:*

	Start Date	Completion Date	Responsible Parties
4.1 Develop RFP for contractor services to design and develop system	1/83	6/83	RED
4.2 Award contract	8/83	9/83	RED
4.3 System design	9/83	12/83	Contractor
4.4 System implementation	1/83	10/84	Contractor
4.5 Review system to determine whether user requirements are being satisfied	10/85	1/86	RED

5. *Resource Requirements:*

Fiscal Years:	FY 84	FY 85	FY 86	FY 87	FY 88
a. Staff Years	1.5	1 .8	-	-	-
b. Other Costs (\$1,000)	-	-	-	-	-

6. *Constraints/Conditions/Assumptions:*

Design and implementation of the system by scheduled completion dates and the follow-up reviews are contingent upon contractor performance. Data base entry and update are the responsibility of agencies and therefore depends on their ability to perform.

Objective D-2: Controlling Paperwork Burdens on the Public

1. *Objective Statement:* Improve the techniques used by agencies to assess the paperwork burden on individuals, businesses and other private institutions, and state and local governments in order to eliminate unnecessary reporting burdens through September 1988.
2. *Background:* OMB Regulation 5 CFR 1320, Controlling Paperwork Burdens on the Public, establishes stringent new criteria for the clearance of an agency's information collections. The regulation has identified new categories of burdens imposed upon the public which must now be measured (testing, inspection, labeling and procurement activities). In addition, collections of information not previously reviewed and approved by OMB must be submitted to OMB for review prior to December 31, 1983.

USDA agencies have promulgated 468 OMB approved reporting requirements in regulations which require individuals, businesses and other private institutions, and state and local governments to submit 617 reports to USDA. These reports, along with collections of information for statistical and analytical purposes, carry an annual response burden of 93.9 million hours. The respondent universe spans 55 major industry groups of the Standard Industrial Classification (out of a total of 84).

Additional burdens associated with procurement activities and those represented by the use of GSA standard and optional forms used by the public and Federal employes (considered private citizens in this instance) will further increase the Department's total paperwork burden.

The thrust of these new initiatives will require USDA to introduce techniques to assist agencies in responding to these new demands.

3. *Approach:* An assessment must be made by each agency to determine if any of their regulations, manuals, directives, handbooks, etc., contain information requirements imposed on the public that have not been approved by OMB. Unapproved information collections that have been identified must be scheduled for submission to OMB not later than December 31, 1983. In response to this requirement and in the processing of normal clearance requests, OIRM must be in a position to assist agencies in:
 - identifying information requirements;
 - scheduling orderly reviews by the Department Clearance Office and OMB;
 - assisting agencies to implement Zero Based Reporting (ZBR) reviews;
 - training.

ZBR is the process used to establish and analyze each information requirement generated by an agency. Essential to this process is the establishment of a system which will ensure that each information requirement is evaluated in relation to the program area or legislation it directly supports and the needs of

the agency. ZBR techniques should be used by agencies when there is a clearly defined need to conduct a comprehensive review of its regulations. This disciplined, logical approach to the analysis of a large body of complex rules will provide for the identification of the objective of the enabling legislation and the functions and activities that derive from them. The final product of a ZBR review is the burden assessment of practical utility, the essential element in the OMB approval criteria.

OMB will not approve information collections that do not pass the test of practical utility and these should therefore be cancelled. Certain cancellations may require legislative initiatives. Reductions in the overall Departmental public burden will most likely be accomplished by use of ZBR techniques rather than in the form of previously conducted annual "public reports reviews."

4. *Major Milestones:*

	Start Date	Completion Date	Responsible Parties
4.1 Agency submission of unapproved information collections to OMB for clearance	7/83	12/83	Agencies
4.2 Publish directive reflecting current USDA policies and procedures for complying with PL 96-511 and Part 1320 of 5 CFR	10/83	3/84	OIRM-DCO
4.3 Establish training program <ul style="list-style-type: none">● ZBR● Clearance● Practical utility● review	1/84	6/84	OIRM-DCO
4.4 Develop formulas for measuring burdens for <ul style="list-style-type: none">● Recordkeeping● Labeling● Testing● Inspection● Procurement	1/84	9/84	Agencies & OIRM
4.5 Conduct ZBR as part of resubmission of dockets for clearance as they expire	10/84	9/87	Agencies
4.6 Legislative initiatives to reduce burden (can only be undertaken after ZBR review)	1/85	9/88	Agencies

5. *Resource Requirements:*

Fiscal Years:	FY 84	FY 85	FY 86	FY 87	FY 88
a. Staff Years					
DCO	4	4	4	4	4
Agency	3	8	10	12	4
TOTAL	7	12	14	16	8
b. Other Costs*					
(\$1,000)					
DCO	25	25	25	25	25
Agency	10	25	30	35	15
TOTAL	35	50	55	60	40

*Includes administrative, ADP, travel, and other associated costs, excluding staff costs and benefits.

6. *Constraints/Conditions/Assumptions:*

None

Objective D-3: Eliminating Unnecessary Federal Paperwork Burden

1. *Objective Statement:* Improve the techniques used by agencies to assess the paperwork burden placed on any Federal respondent, within or external to the Department, in order to eliminate unnecessary burden by September 1985.
2. *Background:* This objective is Departmental objective 3 and supports Departmental IRM goals 3 and 6. Since the passage of the Paperwork Reduction Act of 1980, considerable efforts have been made to reduce the paperwork burden placed on individuals, small businesses, and state and local governments. This objective is aimed at reducing the paperwork burdens USDA places on itself or on other Federal agencies or has placed on it by external agencies. Complying with all these requests for information is expensive, time consuming, and sometimes results in duplication of effort.
3. *Approach:* Use the reports and forms components of the Departmental Information Locator System (Departmental objective 1) to identify existing internal and external reporting burdens placed on USDA agencies and staff offices. Identify possible duplication and overlap in these items and candidates for consolidation or elimination. Explore means to decrease the cost of collecting and processing this information and at the same time to increase its usefulness (Departmental objective 4). Encourage originators of requirements and those responding to them to challenge requirements whose costs outweigh expected benefits.
4. *Major Milestones:*

	Start Date	Completion Date	Responsible Parties
4.1 Verify data in automated reports inventory	6/83	1/84	IMD
4.2 Determine whether OO's automated forms inventory can be used as a basis for the forms inventory	10/83	12/83	IMD
4.3 Verify data in automated forms inventory	12/83	3/84	IMD
4.4 Collect additional data items and enter into the inventories	4/84	1/85	IMD
4.5 Incorporate the two separate inventories into the Departmental Information Locator System	1/85	6/85	IMD

		Start Date	Completion Date	Responsible Parties
4.6	Use the inventory to analyze individual forms and reports to identify those which duplicate or overlap, could be combined or eliminated, could be required less frequently, or which could themselves be automated	6/85	ongoing	IMD

5. *Resource Requirements:*

Fiscal Years:	FY 84	FY 85	FY 86	FY 87	FY 88
a. Staff Years	1.5	1.5	1.5	1.5	1.5
b. Other Costs (\$1,000)	—	—	—	—	—

6. *Constraints/Conditions/Assumptions:*

We are assuming that:

- We will be able to use the Office of Operation's (OO) automated forms inventory as a basis for creating the forms inventory data base.
- The new inventory will meet both our and OO's needs and there will not be a need to maintain two separate inventories.
- OO will maintain the stocking and printing information portions of the inventory (e.g., quantities ordered, quantities received, etc.) and that IMD will maintain management information (e.g., form number, title, sponsor, etc.)
- We will be able to use the existing automated reports data base as a basis for the reports inventory.
- Agencies and staff offices will submit required information accurately and in a timely manner.
- We will have the staffing and equipment required to handle data entry.

Accomplishments in support of this objective are dependent upon coordination with work done on Departmental objectives 1 and 4.

Objective D-4: Practical Utility of Data

1. *Objective Statement:* To develop a methodology for determining the practical utility of collecting, processing, and retaining data by November 1984.
2. *Background:* There is an ever-increasing quantity of data that is collected for various purposes. Traditionally, these data collections have been defined and mandated without any concern for what it would cost or what would be done with the data after it is collected. The term 'practical utility' includes not only the costs and utility related to the primary purpose of collection, but also the handling of the data and any enhancements made which add value to the data. Those actions which add value to the data by increasing the opportunities for sharing are of primary importance.

This objective supports Departmental IRM goals 1, 3, and 6.

3. *Approach:* This is an area of interest to many, but little specific definition has been done. Departmental objectives 2 and 3 are closely related requiring coordination with those efforts. Various research papers have addressed aspects of allocating cost and value to information. The GAO has initiated a study of this also. The basic approach to addressing this broad subject in the Department will involve identifying and reviewing these various other efforts.

The Departmental Information Locator System will be used to identify existing information systems and the major data elements that are collected and maintained. The focus of this objective will be to develop a methodology for placing "value" on data and an appropriate Departmental policy to require that justification for collection of information will include a plan for managing the data after it is collected.

4. *Major Milestones:*

	Start Date	Completion Date	Responsible Parties
4.1 Determine how this objective relates to Departmental objectives 2 and 3; define scope and major thrust of this effort	9/83	3/84	RED
4.2 Define a methodology	3/84	9/84	RED
4.3 Develop Departmental policy	8/84	1/85	RED

5. *Resource Requirements:*

Fiscal Years:	FY 84	FY 85	FY 86	FY 87	FY 88
a. Staff Years	.4	.2	-	-	-
b. Other Costs (\$1,000)	-	-	-	-	-

6. *Constraints/Conditions/Assumptions:*

Accomplishments in support of this Departmental objective are dependent upon coordination with work done on Departmental objectives 2 and 3. The issues that will be addressed are extremely sensitive because agencies have traditionally been allowed to collect any information desired without concern for how it would be managed after collection. Further, there has been very little work done in this area on which to base our efforts.

Objective D-5: Departmentwide Data Communications

1. *Objective Statement:* Provide a Departmentwide data communications utility through September 1991.
2. *Background:* A competitive procurement resulted in award of a Departmentwide requirements contract to GTE-Telenet Communications Corporation on March 11, 1983. This contract will cover most of the data communications requirements of USDA until September 1991.
3. *Approach:* OIRM will implement the network services using a three-phase approach. The first phase will include cut-over of existing asynchronous terminals plus bisynchronous 2780/3780 terminals. Special reports and HASP, Bisynchronous 3270, and Univac NTR terminals will be implemented in the second phase. In the third phase, support will be implemented for digital fax, data encryption, and SDLC terminals. Telenet will also use satellite-based communications for more cost-effective synchronous communication. Each of these phases has a set of tasks associated with it to be completed by OIRM. In order for USDA to accomplish these tasks, seven full-time employees will be required starting in FY 83, Quarter 4. They will work with the contractor to assure that contractor's efforts proceed in accordance with USDA requirements. They will work with the agencies to gain their support and to identify nodes to be supported by the contractor. They will also work with the USDA computer centers to prepare for interfacing to the Telenet network and to identify the resources required at the computer centers to support the new environment. This OIRM staff will also work to assure that the contract conditions are satisfied.
4. *Major Milestones:*

	Start Date	Completion Date	Responsible Parties
4.1 Contract Award		3/83	OTD
4.2 Telenet Implementation Plan	5/83	10/83	OTD
4.3 Phase I Cutover asynchronous nodes	10/83	5/84	OTD
4.4 Phase I Cutover synchronous nodes	10/83	5/84	OTD
4.5 Phase II Capability Demo	3/84	5/84	OTD
4.6 Phase II Cutover	5/84	11/84	OTD
4.7 Service to External Resources	7/84	ongoing	OTD
4.8 Phase III Capability Demo	10/84	12/84	OTD

4.9 Phase III Cutover	11/84	2/85	OTD
4.10 All Agency Requirements being supported	11/84	ongoing	OTD
4.11 Satellite Communications	11/84	ongoing	OTD

5. *Resource Requirements:*

Fiscal Years:	FY 84	FY 85	FY 86	FY 87	FY 88
a. Staff Years (OIRM Hdqtrs.) (DCCs)	9	8	7	7	7
b. Other Costs (\$1,000) Travel	2	1.5	1.25	1.25	1.25
	100	30	30	25	25
	30	20	10	10	10

Note: Alternatives funding arrangements to be effective in FY 85; alternatives being explored.

6. *Constraints/Conditions/Assumptions:*

Successful implementation depends on the ability of the contractor to meet the requirements, the commitment and cooperation of all USDA agencies, and the availability of the personnel resources at the OIRM Headquarters.

Objective D-6: Information Dissemination

1. *Objective Statement:* To develop a policy, methodology, and service for dissemination of information outside USDA, meeting requirements for perishable data by March 1984.
2. *Background:* USDA agencies collect or create large amounts of data which have value not only within the Department but also to members of both the public and private sectors. It has been a traditional role of the Department to distribute published data aimed at improving farming practices, increasing sales of agricultural products, and enhancing life in rural America. Information dissemination remains a high priority and technology provides more effective ways to accomplish this objective. USDA is receiving increasing requests from the private sector for access to agricultural data. To meet these requests within our limited resources, we require a single "broker" who can act as our agent to further disseminate data in an equitable manner.

This objective supports Departmental IRM goals 2, 3, 4, and 6.

3. *Approach:* An interagency project has been established to address both the policy and the technical issues associated with electronic dissemination of information. Agencies participating on the policy board are: Agricultural Marketing Service, Economic Research Service, Extension Service, Foreign Agricultural Service, National Agricultural Library, Office of Governmental and Public Affairs, and Statistical Reporting Service with coordination by OIRM. The policy board agreed to address the issues of perishable information separately from on-line data bases and to place first priority on perishable information. A working group was established to identify the required functional specifications of a service to support USDA information dissemination. An RFP is under development and will first go to industry as a Request for Information. The working group is coordinating closely with OMB in relation to cost recovery policy, with Office of the General Counsel on legal issues related to the methodology selected, and with Office of Operations on procurement issues.

For Phase 2, on-line data bases, it is expected that the National Agricultural Library will take more of a leadership role.

4. Major Milestones:

	Start Date	Completion Date	Responsible Parties
4.1 Define the functional requirements and develop RFP for Phase 1 (perishable data)	3/83	9/83	RED, interagency working group
4.2 Revise RFP and select USDA contractor	12/83	3/84	RED, interagency working group

	Start Date	Completion Date	Responsible Parties
4.3 Initiate action on Phase 2 (on-line data bases)	2/84	-	RED
4.4 Perform review of Phase 1 contract	1/85	4/85	RED

5. *Resource Requirements:*

Fiscal Years:	FY 84	FY 85	FY 86	FY 87	FY 88
a. Staff Years:					
OIRM	1.5	2.0	2.0	.5	-
Other USDA	1.5	3.0	4.0	3.0	-
b. Other Costs (\$1,000)	-	-	-	-	-

6. *Constraints/Conditions/Assumptions:*

Because this is an interagency project, the ability to meet deadlines is dependent upon other participants completing their commitments. Further, because of the wide concern for the associated policy issues, it is necessary to obtain broad agreement and support for the selected approach from both within and outside the Department.

Objective D-8: Reexamine and Enhance Departmentwide Automated Management Systems.

1. *Objective Statement:* To reexamine the Departmentwide automated management systems in light of technological advances, to take interim actions to upgrade these systems, and to develop recommendations for major, long-term enhancement of these systems over a five year period.
2. *Background:* This objective encompasses (1) the National Finance Center's ongoing internal system upgrade initiatives and (2) a broadbased, Departmentwide project to reexamine these systems as part of the Reform '88 Program.

The Department of Agriculture has centralized the operation of major automated administrative management systems at the National Finance Center (NFC) in New Orleans, LA. These systems handle payroll processing, personnel management information, administrative payments, property management, billings and collections, as well as centralized accounting.

The Department has achieved significant savings by centralizing these systems at the NFC. The NFC serves many administrative management needs of all USDA agencies; the centralized operation is efficient, effective, and highly productive.

The NFC's automated systems have worked well and continue to serve as a model for the rest of the Federal Government. They do, however, handle excessive volumes of paper; and they generally operate in a batch processing mode which results in delays in providing information to managers. Out-dated equipment at the NFC does not allow full utilization of the rapidly advancing technology of micro and mini computers. Further, there is continuing pressure to reduce the cost of administrative operations, and agency managers have expressed needs for additional decision support information.

These factors, coupled with new technology and the proliferation of data processing capabilities throughout USDA agencies, argue for a major, Departmentwide reassessment of:

- how USDA agencies can make the best use of their information processing capabilities in their interface with the central Departmental management systems,
- how transactions are processed,
- what information is needed at various organizational levels throughout the agencies, at the Departmental level, and in the Central Guidance Agencies, and
- how and where information is gathered and reported.

These problems are being addressed in two ways:

- the NFC is taking interim steps to upgrade its systems within the context of existing system design, and

- a Departmental Reform '88 task force is taking a fresh look at information needs, basic system architecture, and the relationship between the NFC and the agencies.

Both of these efforts are aimed at:

- developing simpler and more economical processing methods,
- improving the flow of information,
- improving access to these systems to increase the availability of information,
- improving agency control over information, and
- improving accuracy and timeliness of information.

3. Approach:

3.1 NFC Internal System Improvements:

The NFC continues to increase productivity through internal management and system improvements, involving continual system examination, enhancement, redesign, and reprogramming. Innovative processing and telecommunications technologies are being applied constantly to improve service delivery and program management.

Major innovations are underway in the area of remote multiple access to NFC systems (involving remote data entry, pre-edit of data, and remote access of NFC data bases). Technological advances make it possible to improve management effectiveness through sharing centrally-stored information with client agencies. This concept will permit agencies greater access to and ownership of their data.

In the short term, the NFC, in cooperation with several agencies, is implementing remote entry and editing of payroll and personnel documents. The Equipment Management Information System has been implemented to provide similar capability. In addition, agencies are electronically transmitting a significant volume of data to the NFC. This includes miscellaneous pay data, period-end estimates, valid accounting codes, personal property updates, and collection data.

The NFC's long-term plan provides for development of a strategy to complete the implementation of those systems operated at the NFC which are candidates for remote multiple access.

3.2 Reform '88 Reexamination of Systems:

This reassessment is being carried out by a Departmentwide task force as part of the USDA Reform '88 Action Plan. The task force involves dozens of administrative and program managers from agencies throughout USDA on detail to the Departmental level task force.

The project has been organized into four areas: Personnel Systems, Financial Systems, Administrative Services Systems, and Technological Support/

Information Resource Management. The first three study areas were staffed and began their analysis in June 1983. Their charge was to evaluate and define information needs without consideration of technology.

In close coordination with the agencies, these teams are producing three products:

- a description of how the various USDA administrative systems should function for the next decade,
- a detailed information requirements analysis for each functional area, and
- a synthesis of the discrete functional requirements with proposals for how they should interface.

This effort will require a definition of existing systems, as well.

Upon completion of these efforts, the team leaders and selected team members, together with the technology team, will describe a flexible, but coherent overall administrative system architecture designed to meet projected needs. The final product will be an implementation plan guiding the Department, step by step, from the present status to the desired future system operation.

The recommendations of the task force will concentrate on defining the most cost-effective means of distributing information processing functions among organizational levels. These recommendations will be based on analysis of Departmentwide information requirements and examination of alternative system architectures.

It is particularly important to look at this effort as an investment in the future of the Department. Extensive analysis will be required before substantial recommendations can be made. This analysis is being performed in the first half of fiscal year 1984; the task force's final report and recommendations will be issued on March 31, 1984. Decisions on these recommendations will be made during the second half of fiscal year 1984.

3.3 Coordination of Efforts and Impact on Long-Range IRM Planning:

The NFC's on-going efforts to improve these centralized automated management systems will continue. When decisions are made on the Reform '88 task force's recommendations, enhancement efforts can be pulled together into a unified system upgrade action plan.

The results of this effort will have a significant impact on the 1984 long-range IRM planning process, as plans are developed for 1985-1989.

Of paramount importance, this process will provide a conceptual framework and a system architecture around which USDA agencies will be able to design their internal administrative management systems. It is vital that agency long-range IRM planning be carefully coordinated with this effort.

4. Major Milestones

	Start date	Completion date	Responsible Parties
4.1 NFC Initiatives:			
a. Enhance the Payroll Personnel System as Follows:			Clyde G. McShan, II, Director, NFC (FTS 680-5200)
Develop and Implement a Retirement Control System	7/82	2/84	
Develop Personnel Reporting Modules	10/82	7/85	
Expand Payroll Inquiry Capabilities	1/83	3/84	
Improve Payroll Interface with CAS	6/82	6/84	
Develop History Maintenance	1/83	9/84	
Expand Payroll/Personnel Data Base to Include Retirement Processing	6/84	9/85	
b. Redesign the Billings and Collections System as Follows:			Clyde G. McShan, II, Director, NFC (FTS 680-5200)
Complete the General Redesign of the Administrative Billings System Using a Data Base Design	10/82	10/83	
Complete Detail Redesign of the Administrative Billings System and Implement System	10/83	1/85	
Expand Program Billings and Collections to Accommodate Remaining USDA Programs	10/84	12/85	

	Start Date	Completion Date	Responsible Parties
c. Enhance the Accounting System as Follows:			Clyde G. McShan, II, Director, NFC (FTS 680-5200)
Design Real Property System to be Under General Ledger Control	10/85	9/86	
Establish Budget Forecasting System	10/85	10/86	
Interface Administrative Accounting (CAS) with Program Accounting for ASCS, FCIC, FmHA, and REA	12/85	10/86	
Upgrade Accounting Systems to Provide Data Base Files for Agency Access	10/86	9/87	
d. Expand Administrative Payments System Follows:			Clyde G. McShan, II, as Director, NFC (FTS 680-5200)
Establish Vendor Name and Address File	10/83	10/84	
Fully Implement 1099 Reporting to IRS	10/82	12/83	
Provide Improved payment Method (BPA, Contracts) to Replace MISC Payments System	3/83	10/84	
Test and Implement Improved Payment Method (Contracts, BPA) to Replace MISC Payments System	10/84	10/85	
Establish Method for Handling Miscellaneous	10/86	9/87	

	Start Date	Completion Date	Responsible Parties
Government Payments Outside of MISC Payments System			
e. Provide for Remote Multiple Access to NFC Systems, as Follows:			Clyde G. McShan, II, Director, NFC (FTS 680-5200)
Conduct Planning and Testing	6/83	1/84	
Test Client Agencies' Use of Remote Access Systems (Data on EEO, Property, Finance Personnel, etc.)	10/83	3/84	
Evaluate Efforts	1/84	6/84	
Phase in Implementation and Expansion of Remote Access Activities	1/84	9/88	
4.2 Reform '88 Activities:			
a. Organize Work Groups and Develop Project Plan	4/83	6/83	John Kratzke Project Manager (447-7557)
b. Complete Data Collection as Follows:			
Administrative Services Systems	6/83	10/83	Len Covello (475-4978)
Personnel Management Systems	6/83	10/83	George Robertson (344-2994)
Financial Management Systems	6/83	10/83	Peter Ben Ezra (344-2994)
c. Define How Future systems Should Work in the Following Areas:			
Administrative Services	7/83	12/83	Len Covello (475-4978)

	Start date	Completion date	Responsible Parties
Personnel Management	7/83	12/83	George Robertson (344-2994)
Financial Management	8/83	12/83	Peter Ben Ezra (334-2994)
d. Provide Interfaced Information Requirements Analysis	12/83	2/84	Kratzke, Covello Robertson, and Ben Ezra
e. Develop Alternative Systems Architecture Recommendation	11/83	2/84	John Kratzke and Ira Cebulash Ben Ezra
f. Prepare Final Report with Recommendations and Suggested Implementation Plans	2/84	3/84	Kratzke, Covello Robertson, Ben Ezra, and Cebulash

5. *Resources Requirements*

Fiscal Years:	FY 84	FY 85	FY 86	FY 87	FY 88
a. Staff Years					
NFC	112	111	94	112	112
Reform '88	18	0	0	0	0
Total	<u>130</u>	<u>111</u>	<u>94</u>	<u>112</u>	<u>112</u>
b. Other Costs (\$1,000)					
NFC	\$42	—	—	—	—
Reform '88	\$150	—	—	—	—
Total	<u>\$192</u>				

6. *Constraints/Conditions/Assumptions:*

- a. Assumes availability of adequate computer resources and programming staff.
- b. Assumes continued agency support.
- c. Assumes competent and timely review of Reform '88 task force reports and recommendations by agencies,
- d. Assumes implementation of Reform '88 recommendations with necessary investment up front to gain long-term savings.
- e. Reform '88 planning requires careful interface with major on-going agency and Departmental automation initiatives, including a solid meshing of Reform '88 and NFC initiatives.

Objective D-10: Executive Information Support Center

1. *Objective Statement:* To improve and expand the Executive Support Center to provide current information to senior policy officials of the Department by April 1984 and on a continuing basis.
2. *Background:* There is an important need for the Department's top policy officials to have ready access to current information to assist in the decision making process. In support of this requirement, a plan was developed to implement an Executive Information Support System to provide immediate access to specific agency program and administrative information.

A small computer center was established earlier utilizing an HP-3000 computer to provide selected ADP and word processing services to the Office of the Secretary. Because of the direct relationship between the planned application and operating environment of this center and the requirements of the Executive Information Support System, the two efforts have been combined.

This objective supports Departmental IRM goals 2 and 4.

3. *Approach:* After meeting with senior policy officials of the Department in order to define the scope of the project and categories of the data required, work proceeded on identifying the functional requirements. A basic decision was made as to what offices would be supported by this system. An outside consultant may be utilized if required to accomplish the objectives in as short a time frame as possible or to provide specific expertise.

Based on discussions with the senior officials, an implementation plan will be developed and each of the required applications will be assigned appropriate priority. At the same time, activity is underway to improve the capabilities of the HP-3000 system and install needed terminals and acquire needed staffing.

4. *Major Milestones:*

	Start Date	Completion Date	Responsible Parties
4.1 Improve physical security and operational capacity of the equipment at the center	8/83	8/84	ATSD
4.2 Develop an implementation plan for the Executive Information Support System	10/83	1/84	RED
4.3 Identify requirements, develop Testimony & Legislative Tracking System, document and train users	8/83	4/84	ATSD RED

	Start Date	Completion Date	Responsible Parties
4.4 Identify next priority requirements; develop additional systems	10/83	9/88	ATSD RED
4.5 Perform review of use of operational systems	4/84	continuing	RED

5. Resource Requirements:

Fiscal Years:	FY 84	FY 85	FY 86	FY 87	FY 88
a. Staff Years:					
RED	.5	.2	.1	-	-
ATSD	7	7	7	7	7
b. Other Costs (\$1,000)	-	-	-	-	-

6. *Constraints/Conditions/Assumptions:*

Accomplishment of this objective is dependent upon the availability of users in the Office of the Secretary to provide requirements and feedback on system acceptance and is also dependent on the ability of the agencies to provide data. Additional staffing in ATSD as well as a stable HP 3000 environment are assumed to meet completion dates. To accomplish this there is a need for increased space for the center and sufficient funding for staff and additional equipment.

Objective D-11: End User Computing in USDA

1. *Objective Statement:* To establish Departmental strategies, standards, and guidelines for the acquisition and use of end user computers in USDA's distributed processing environment by October 1984.
2. *Background:* Early versions of end user computers (the personal or professional computers, the word processing and/or automated office machines based on micro computer technology) were, generally, stand-alone systems. Some had limited communications capability to share a central processor and/or files. These were the so-called "shared-logic" systems.

Today, the distinction between the personal, professional, word processing and office automation machines is blurring because the basic functions of each class have been integrated by industry into every class. Most, if not all, of the new small scale computers now have communications capability to link the end user to a variety of small-to-large-scale host computers.

Through intercommunication of end user computers with its Departmental Computer Centers, the National Finance Center, and the growing number of agency-managed host computers, the USDA is creating an "instant, ready-made" distributed processing environment.

Over the next few years, USDA will see the integration of thousands of end user computers in its information processing inventory. In order to insure an orderly growth, and to make best possible use of this technology, the Department must establish a set of management strategies, standards, and guidelines governing the acquisition and use of these end user computers. (This objective supports Departmental goals 2, 5, and 7.)

3. *Approach:* Several issues, some independent and some interrelated will be examined and evaluated, then a recommended Department position on each issue will be put forth for Departmentwide acceptance.

Examples of some primary issues include: telecommunications standards; standard high-level languages; portability of source programs (vendor to vendor); portability of proprietary software; host computer access and file access controls (security); and optimum acquisition methods. The methods to be considered may include: standardized RFP's in which Departmental standards are "boiler-plated" and agency "fill-in-the blank" parts are provided for optional specifications; or Departmental requirements contracts (similar to the USDA terminal requirements contracts) developed by a joint OIRM/agency task force.

This objective will be coordinated and managed by the Planning Division, but will require the combined expertise of several OIRM Divisions. Some of these issues may require inputs from the Department's agencies. Each milestone below indicates the Division of primary responsibilities.

4. Major Milestones

		Start Date	Completion Date	Responsible Parties
4.1	Revise the microcomputer policies. Include appropriate acquisition approach; multiple buys in hardware and software; and improved standards and security.	10/83	2/84	ATSD
4.2	Develop a program for the exchange of end user computing information, emphasizing the concept of potential sharing of end user software and hardware among specific disciplines (e.g. accounting).	12/83	7/84	ATSD
4.3	Establish a program to research future uses of microcomputers. Identify strategies employed by other Government agencies and private sector organizations in the acquisition and use of end user computing.	10/83	4/84	PD
4.4	Review end user computing throughout USDA.	10/83	4/84	RED
4.5	Address problem of data integrity in an end user computing environment.	3/84	6/84	RED
4.6	Identify security issues concerning end user computing.	11/83	4/84	ATSD
4.7	Develop and publish directives on security of end user computing.	1/84	10/84	ATSD
4.8	Recommend areas requiring policy, standards, and guidelines.	6/84	9/84	RED

5. *Resources Requirements:*

Fiscal Years:	FY 84	FY 85	FY 86	FY 87	FY 88
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a. Staff Years	2.6
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b. Other Costs	
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6. *Constraints/Conditions/Assumptions:*

Timely completion depends on availability of staff resources.

Objective D-12: Revising IRM Directives

1. *Objective Statement.* Revise current directives to define and reflect cohesive, up-to-date policy and procedures for IRM by January 1984.
2. *Background:* This objective supports Departmental IRM goals 2 and 9. All IRM Departmental directives in the Agriculture Regulation format need to be revised to provide a complete, coherent set of Departmental IRM policies and procedures.
3. *Approach:* Each OIRM division is responsible for developing IRM policies and procedures in their functional areas. IMD will continue to work with the divisions to identify directives which need to be revised and to provide assistance and advice in issuing these policies as Departmental directives. The directives will be developed by the responsible division, circulated within OIRM for comment, circulated to agency program managers for review and comment, and finalized. They will be formally cleared with the Director, OIRM, and sent to the Senior IRM Policy Official for approval.
4. *Major Milestones:*

		Start Date	Completion Date	Responsible Parties
4.1	Identify directives which need to be written and the responsible division. Set up a schedule for preparing drafts	8/83	9/83	IMD
4.2	Monitor the conversion effort and report periodically to the Director, OIRM, on the progress made	8/83	1/84	IMD
4.3	Write the IRM directives IMD is responsible for	9/83	1/84	IMD

5. *Resource Requirements:*

Fiscal Years:	FY 84	FY 85	FY 86	FY 87	FY 88
a. Staff Years	.6	—	—	—	—
b. Other Costs (\$1,000)	—	—	—	—	—

6. *Constraints/Conditions/Assumptions:*

The critical elements of developing and writing the policy in the Departmental Directives System format rests with the divisions responsible for writing the directives. Advice and assistance is a more critical factor in IMD's responsibilities than processing, which is more a mechanical function. Therefore, the major IMD effort, except for the directives we are responsible for originating, will be monitoring and providing assistance. Another constraint is coordination with agencies and/or staff offices not under control of IMD, OIRM, or the Assistant Secretary for Administration.

Objective D-13: IRM Management Control Process

1. *Objective Statement:* To implement an IRM management control process within OIRM designed to promote effective and efficient use of information resources in the Department by September 1984.
2. *Background:* The intent of P.L. 96-511 is to encourage improvement in the management of information resources. The Assistant Secretary for Administration, as the Departmental Senior Official for IRM, is held responsible and he, in turn, has delegated most of the supporting functions to the Director of OIRM. A control process is required in order to carry out these responsibilities properly. This process includes establishing policy and procedures defining what is expected of agencies, procedures for evaluating performance, and modifying the degree of control based on an agency's demonstrated ability to perform.

This objective supports Departmental IRM goals 2, 5, and 7.

3. *Approach:* This objective is supported by activities led by both Agency Technical Services Division and the Review and Evaluation Division. The technical approval process, the flexible delegation approach, the review and evaluation process, and the function of the Departmental Systems Review Board all support the total IRM management control process.

The major milestones reflect programs that are in the process of implementation. While implementation has a specific completion date, they will then be ongoing activities unless changed by further review.

4. *Major Milestones:*

	Start Date	Completion Date	Responsible Parties
4.1 Implement procedures to change thresholds for technical approval	10/83	9/84	ATSD
4.2 Develop and implement procedures for Departmental Systems Review Board	9/83	1/84	RED Review Board
4.3 Identify highest priority projects to be reviewed by the Board; conduct first review	11/83	2/84	Review Board RED
4.4 Perform IRM reviews in support of the management control program	8/83	9/85	RED

4.5 Assess the review and evaluation program in terms of its contribution to the management control program	4/85	8/85	RED
4.6 Assess the functioning of the Departmental System Review Board	5/85	10/85	RED Task Force

5. *Resource Requirements:*

Fiscal Years:	FY 84	FY 85	FY 86	FY 87	FY 88
a. Staff Years:					
RED	.5	.5	.5	.5	.5
ATSD	1	.5	.5	.5	.5
b. Other Costs (\$1,000)	1	1	1	1	1
Travel associated with various review functions					

6. *Constraints/Conditions/Assumptions:*

Completion of many of the milestones are dependent upon both OIRM resources and the availability of the members of Departmental Systems Review Board.

Objective D-15: Information Centers

1. *Objective:* To develop and implement an Information Center capability at each of the Departmental Computer Centers by FY 86.
2. *Background:* In the past decade, USDA relied, in large part, on the Departmental Computer Centers to process hundreds of agency (ADP) applications. To meet this demand, the Centers employed large-scale computers and operated data processing service bureaus.

In the decade of the '80s, new demands are being made on the Centers by USDA agencies who are faced with managing ever-increasing amounts of information in order to meet their program and administrative requirements — information that must be accessible to ever-increasing numbers of users.

To meet this demand, and through the steps outlined in this Departmental objective, each of the Centers will expand its services to that of an "information center", which is defined by OIRM as follows:

"An information center is a multi-user computer facility which, in addition to providing traditional computational and data processing services, offers hardware and software capabilities that permit users to enter and retrieve information and engage in interactive problem solving directly with minimum assistance from computer professionals."

With this definition, and an insight as to the ADP direction and potential problems over the next five years, new characteristics at the DCC's can be formed. The number of ADP and non-ADP professionals interfacing with the DCCs will need a "closed loop" ADP utility that is effective, available, and as easy to use as local telephone services:

- Accessibility to the information resources must be automatic regardless of how distributed;
- Outages or unavailability of services must be minimized. We are fast approaching the time when zero interruption is the only acceptable service;
- Error detection and correction techniques of hardware and software problems must occur automatically;
- A high degree of transparency must exist between updated hardware and software releases;
- Highly intelligent end user software tools must evolve in order to materially increase personnel productivity;
- End users must have access to technical experts when any portion of the ADP service has problems that cannot be automatically recovered;
- The DCCs must get into a position of providing expert consulting and leadership in data base design and distributed data base technology.

3. *Approach:* Each Departmental Computer Center will undertake tasks during the next five years to implement those characteristics described in the background of this objective that distinguishes an "Information Center" capability. Central site hardware procurement to support host computing capacity and expanded telecommunications requirements is an important function of this overall philosophy; however, these are addressed in separate OIRM objectives. This objective addresses all other tasks to be undertaken that support the information center concept.

In order to maintain a continuity of configuration in this plan, each Center's approach is presented in this section in alphabetical order, followed by their major milestones in section 4, resource requirements in section 5 and assumptions in section 6.

Fort Collins Computer Center (FCCC)

FCCC's approach will be multifaceted in nature, with specific action steps being embedded in most of the other objectives of the Center. Some of these steps will be to:

- Advise and assist clients in their planning, designing and developing application systems and data bases so that "user friendliness" becomes an inherent part of their systems;
- Acquire the necessary equipment at the Center so that prime shift processing capabilities become increased in order to better respond to interactive end user requirements, as well as providing better input-output support for instant problem solving;
- Develop the multihost networking capabilities at the Center to enable end users to connect to various computers in the Department;
- Continue actions at the Center to implement utility software and graphics packages, such as MAPPER, DISSPLA, UNICORN, etc. which will materially assist end users in their processing actions.

Kansas City Computer Center (KCCC)

The KCCC will enact several tasks to support the concepts of an information center:

- (1) The KCCC will create a formalized "operations control center" function within the current structure of the Computer Management Branch (CMB). Many operational decisions and problem determination functions now fragmented within the Center will be concentrated in the control center. CRT displays and software tools will be provided to maximize the monitoring, load balancing, computer throughput and operational problem determination on all three shifts of scheduled operations. Users will have a single telephone contact for all current machine operating conditions and problems which will include telecommunications monitoring capability.
- (2) The KCCC will provide users better access to computer usage resource data for their planning and monitoring of ADP applications by installing a new

information system. This system will provide both billing and resource utilization data.

(3) The KCCC will take action to isolate the cause of each incident of downtime or unavailability of hardware or software services and devise preventative measures to either eliminate or minimize the recurrence of each. This program will contain formal documentation of cause and effect and final actions taken. Alternatives in many cases may have to be considered because of manpower, costs, or feasibility.

Current methods are too "hit or miss," fragmented, lacking in formalized follow-up and, therefore, are inadequate to satisfy the intent of this objective.

(4) The KCCC will offer more "tailored" user training courses that concentrate on filling major experience gaps such as Data Base design and implementation. The training should also zero in on areas that cause users lost time and major delays in completing production cycles.

(5) The KCCC will concentrate on installing, testing and developing standards on the use of productivity tools that materially increase programmer and other end user efficiency.

Washington Computer Center (WCC)

The WCC will take the following approach to accomplish this objective:

- Develop an Information Center Project plan;
- Determine the types of services to be offered in the pilot program; and,
- Design and implement requirements for hardware, facilities and software.

4. Major Milestones:

Fort Collins Computer Center (FCCC)

	Start Date	Completion Date	Responsible Parties
4.1 Implement "user-friendly" Release II of BIS (as stated in BIS 3-year plan)	11/82	01/85	FCCC-IMB
4.2 Conduct Pilot study of MAPPER; recommend course of action	04/83	11/83	FCCC-SEB
4.3 Develop a five-year conceptual Information Management Plan (including concepts of "Information Center" and "functional processing")	07/83	10/83	FCCC-SEB

		Start Date	Completion Date	Responsible Parties
4.4	Develop and install software to provide automatic transfer of data between FCCC and other sites (Jet Propulsion Lab, NFC, KCCC).	07/83	03/84	FCCC-CEB, SEB
4.5	Connect FCCC's "FLIPS A" (DG MV/8000) to Sperry 1100's (local host-to-host network).	07/83	08/84	FCCC-CEB, SEB
4.6	Provide new interactive (user friendly) graphics capabilities	08/83	07/85	FCCC-SEB, CMB
4.7	In conjunction with other DCCs (and NFC), define methods and procedures for interfacing host computers at multiple DCCs (including NFC).	11/83	05/85	FCCC-CEB; Other DCCs (and NFC)
4.8	Acquire and install large-scale computer system to increase capacity of utility system (this begins functional processing by moving BIS to a separate system)	09/84	01/85	FCCC-RMS, CMB
4.9	Study, evaluate and recommend new data base management systems and decision support systems as they become available.	09/84	01/85	FCCC-RMS, CMB
4.10	Acquire and install additional cache disk subsystem	01/85	07/85	FCCC-RMS, CMB

Kansas City Computer Center (KCCC)

4.1	Establish initial responsibilities and duties of operations control center personnel	9/83	4/84	KCCC
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		Start Date	Completion Date	Responsible Parties
4.2	Invoke first phase of Control Center	2/84	6/84	KCCC
4.3	Based on evaluation of first phase of Control Center, establish total feasible control	6/84	10/84	KCCC
4.4	Implementation of the procured management information system for resource usage	8/83	2/84	KCCC
4.5	Develop the concept plan for management of information and reporting related to demand, service levels, configuration management, modeling and assurance	8/83	2/84	KCCC
4.6	Implement and incorporate demand service levels, and configuration management into the Center's common information management system	1/84	7/85	KCCC
4.7	Implementation of service level data into the common management information system, including prototype modeling and forecasting system	8/84	4/85	KCCC
4.8	Reporting to users of historical information center and modeled needs for concurrence or change to service levels, demands and budget cost projection	4/85	7/85	KCCC
4.9	Develop and implement a Departmental Information Management System for the Departmentwide management of all ADP hardware, software,	8/83	9/84	KCCC

		Start Date	Completion Date	Responsible Parties
	application systems, procedures, paperwork reduction and telecommunications			
4.10	Evaluate current logging and reporting procedures for downtime and interruptions for improvements	9/83	11/83	KCCC
4.11	Implement a new procedure for tracking interruptions that have strong follow-up actions	11/83	5/84	KCCC
4.12	Establish priority training needed by users based on experience level and major problem areas	10/83	4/84	KCCC
4.13	Construct the first three priority training courses	4/84	10/84	KCCC
4.14	Establish remainder of 5-year training courses based on manpower and users' critical needs	8/84	2/85	KCCC
4.15	Investigate and install IDMS Relational Data Base System	2/84	10/84	KCCC

Washington Computer Center (WCC)

4.1	Develop total Information Center plan	05/83	11/83	WCC-ISMB
4.2	Determine types of services to be offered in pilot program	05/83	11/83	WCC-ISMB
4.3	Establish an organization and staffing plan	05/83	11/83	WCC-ISMB

	Start Date	Completion Date	Responsible Parties
4.4 Design hardware facilities	10/83	12/84	WCC-ISMB
4.5 Design layout of application packages into most appropriate menu based subsystems	10/83	03/84	WCC-ISMB
4.6 Implement approved designs with selected client(s)	04/84	06/84	WCC-ISMB
4.7 Operate and evaluate Information Center	04/84	06/88	WCC-ISMB
4.8 Maintain and improve Information Center software	04/84	09/88	WCC-ISMB

5. *Resource Requirements:*

Fort Collins Computer Center (FCC)

a. Incorporated in other FCCC objectives.

Kansas City Computer Center

Fiscal Years:	FY 84	FY 85	FY 86	FY 87	FY 88
a. Staff Years	7.0	6.0	6.0	4.5	4.5
b. Other Costs (\$1,000)	\$120	\$125	\$20	\$10	\$10

Washington Computer Center (WCC)

Fiscal Years:	FY 84	FY 85	FY 86	FY 87	FY 88
a. Staff Years	6	5	5	5	5
b. Other Costs (\$1,000)					
Contracting	\$10	-	-	-	-
Hardware/ Software	\$100	\$250	\$100	\$100	\$100
Facilities	\$20	-	-	-	-
Renovation					

6. *Constraints/Conditions/Assumptions:*

Fort Collins Computer Center (FCCC)

Nonadditional. Incorporated into other FCCC objectives.

Kansas City Computer Center (KCCC)

In order to attain this objective, the assumption is that KCCC's uncontrollable items such as clients' workloads, top management's work priorities, dollar and people resource availability, administrative approvals, and dependent actions of outside organizations will occur reasonably consistent with expectations at the start of the five-year period.

Washington Computer Center (WCC)

In order to attain this objective, the assumption is that WCC's incontrollable items such as clients' workloads, top management's work priorities, dollar and people resource availability, administration approvals and dependent actions of outside organizations will occur reasonably consistent with expectations at the start of the five-year period.

Objective D-16: Incorporate Records Management Principles into Handling of Electronic Information

1. *Objective Statement:* Develop policy and procedures to incorporate records management principles into the process of handling and storing information electronically by September 1986.
2. *Background:* This objective supports Departmental IRM goals 2 and 5. As more and more records are created in an electronic media and never converted to hard copy, the adequacy of documentation necessary for historical, archival, and operational purposes may be affected. We need stored information. This matter is of concern not just to USDA, but to the entire Federal Government as well.
3. *Approach:* USDA has already raised this issue with GSA, the central management agency with Government-wide responsibility in this area. IMD expects to participate in the Government-wide interagency task force which will address this issue. Internally, IMD is leading an interagency task force which is addressing this issue.
4. *Major Milestones:*

		Start Date	Completion Date	Responsible Parties
4.1	Participate in Governmentwide interagency task force to develop Governmentwide standards	10/83	9/84	IMD
4.2	Participate in USDA interagency task group which will help develop Departmental policy and procedure	10/83	9/84	IMD
4.3	Issue Departmental policy and procedures	10/84	9/85	IMD

5. *Resource Requirements:*

Fiscal Years:	FY 84	FY 85	FY 86	FY 87	FY 88
a. Staff Years	.5	.5	.2	—	—
b. Other Costs (\$1,000)	—	—	—	—	—

6. *Constraints/Conditions/Assumptions:*

GSA is responsible for establishing the interagency task force. If they do not establish it by October 1984, several of the dates in the milestones will have to slip.

7. Financial and Resource Requirements

- The costs involved

The intent of this section is: (1) to show, in graphic and tabular form, some of the financial information extracted from the most recent (FY 85) OMB A-11 Information Technology Systems (ITS) Reports, formerly called Exhibits 43; (2) to show resource requirement estimates from the USDA agency long-range IRM plans for the plan years FY 84 - 88; and (3) to draw some comparisons between them.

Because the Department's long-range IRM planning process calls for strategic plans that cover objectives for major IRM efforts and not all activities, the total resource requirements specified in the plans may be somewhat lower than the ITS reports for any given year. On the other hand, some IRM-related expenditures are not covered in the ITS reports which tends to offset the differences.

This section first shows comparisons between USDA and other non-DOD federal agencies (Section 7.1); then between agencies within USDA (Section 7.2); and then shows resources, staff and other costs, estimated to implement the agency long-range IRM plans (Section 7.3). All of the exhibits referenced in this section may be found at the end of the section. The term "other" agencies refers, in all cases, to all other in the set being examined that are not explicitly named in the particular exhibit.

7.1 Information Technology Systems Obligations Governmentwide

In order to improve delivery of its program services, the Department of Agriculture is moving to the forefront in developing and implementing strategic planning for the IRM technologies. USDA agencies are planning, designing, and implementing strategies that will have profound effects on how information and, in turn, programs are managed. In an evolutionary manner, significant improvements will be made over the next three to five years in the methodologies utilized by USDA to manage its information resources, but without significant increases in IRM expenditures.

An analysis of the Information Technology Systems (ITS) Reports submitted to the OMB, during the FY 1985 budget process, indicates that the USDA ranks fifth among non-DOD agencies in total dollars obligated for the information systems technologies (Exhibit 1). Exhibits 2 - 4 show the top five government agencies as a percent of the Governmentwide total ITS obligations for FY 83, 84, and 85. Exhibit 5 shows

actual dollar obligations for this same three year period.

Although USDA's total obligations rank fifth, its growth rate from FY 83 to FY 85 is 26% with a ranking of third among the top five agencies.

**Growth Rate
FY 83 to FY 85**

Agency	%
Treasury	40
Energy	33
USDA	26
HHS	23
NASA	21
Overall average	27
Median	25

USDA plans to overcome the handicap of its somewhat limited program budget through use of state-of-the-art technologies and innovative solutions in designing their IRM systems for improved program support, Departmentwide.

7.2 USDA ITS Obligations Departmentwide

USDA ITS obligations, and those of its individual agencies, are shown in Exhibit 6. The FY 83 total was 340 million dollars; FY 84 and FY 85 are projected to be 396 million dollars and 431 million dollars, respectively. Thus, the USDA FY 84 ITS budget is 17% above FY 83, and FY 85 is expected to be approximately 9% above FY 84. In FY 84 many of the USDA agencies are planning large expenditures, either capital investments or equipment rentals, for IRM technology systems and tools. A substantial portion of these expenditures is slated for office automation. These investments reflect a commitment on the part of USDA agencies to use information systems technologies to increase productivity and improve program delivery.

Exhibits 7-9 show the top five USDA agencies (from Exhibit 6) as a percent of the total USDA ITS obligations for FY 83-85; Exhibit 10 shows corresponding dollars.

Because of the way OMB specifies the reporting of ITS obligations, the USDA obligations shown in Exhibit

6 do not include dollars from the working capital fund (WCF). In FY 85 this fund will reimburse nearly 100% of the OFM ITS budget, and 85% of OIRM's budget, primarily for services provided by the NFC and the Departmental Computer Centers. Exhibit 11 shows the FY 85 budgets for the top fifteen agencies, adjusted by the WCF dollars for OFM and OIRM. The OFM amount of \$121,608,000 in this adjusted list includes all of NFC's budget of \$121,493,000 not shown in the USDA ITS obligations list. Of the entire OIRM budget of \$51,189,000 in the adjusted list, \$6,147,000 or 16% is included in the USDA ITS obligations list. In the absence of the adjusted figures in Exhibit 11, almost \$166 million dollars would not be explicitly identifiable.

USDA ITS Obligations by Major Areas

USDA funds for Information Technology Systems are obligated in four major areas: capital investments; equipment rental and operating costs; personnel; and commercial services.

Capitol Investments. Exhibits 12-14 show capital investments for the top five agencies in USDA as a percent of the total USDA obligations for FY 83, 84, and 85; Exhibit 15 shows actual dollar amounts for these same agencies.

ARS, ASCS, FmHA, FS, and SCS represent, on the average over the three years, about 80% of the total expenditures for capital investments. But, the "other" agencies are beginning to narrow the gap between themselves and these five agencies that, historically, have been in the forefront in employing information technology and, consequently, have acquired expertise in developing information systems and using IRM technologies. The "other" agencies, until recently, did not have this advantage. The tremendous improvements in the information processing technologies that have taken place recently, especially the lowered price/performance ratios, have enabled the "other" agencies to acquire information processing equipment and services at a cost they can afford. Thus, the relative increases in their obligations for capital investments is growing year by year. For example, for "other" agencies, anticipated expenditures for capital investments, FY 83 to 85, increased by 110% (10-21 million), while the USDA total capital investments increased by 70%.

Equipment Rental and Operating Costs. Exhibits 16-18 show relative equipment costs for the top-five agencies and "other" agencies as a percentage of total USDA expenditures. The total expenditures of the "other" agencies (see Exhibits 7-9) average only 25% of the USDA total ITS obligations; on the other hand, their percentages of USDA total expenditures for equipment rental and operating costs (Exhibits 16-18) were 55% in FY 83; 61% in FY 84; and 64% in FY 85. This trend toward higher obligations in this area may reverse in time. When these agencies gain more expertise in utilizing IRM technologies, more of their ITS dollars may well go to capital investments. Actual dollars are shown in Exhibit 19.

Personnel and Commercial Services. For these two areas, comparative and actual dollars are shown separately in Exhibits 20-23 and 24-27. The percent of dollars obligated by the "other" agencies for personnel and commercial services is 10 to 20% higher than their percent of the total ITS budget, while the top five agency share is correspondingly lower. This may indicate that the top five agencies can develop systems (hardware and software) with relatively fewer staff resources and/or commercial services than the "other" agencies who, in many cases, depend on the private sector to supply contract services that the larger, more technologically mature agencies provide internally.

7.3 Resource Requirements from Agency Long-Range IRM Plans

Agencies submit, as an integral part of their long-range IRM plans, objectives that include estimated resource requirements for staff resources and other costs (dollars) over the five year period covered by the plan.

Five Year Totals. Exhibit 28 shows the estimated five-year total resource requirements for FY 84 - 88 for each of thirty-three USDA agencies. The top five agencies, in terms of staff resources, are represented in Exhibits 29 and 30. The top five agencies in terms of estimated dollar expenditures are represented in Exhibits 31 and 32. An analysis of the long-range planning data shows that, with few exceptions, the agencies that plan to expend large amounts of funds

(other costs) are the same agencies that plan to utilize large amounts of staff resources to implement their long-range IRM objectives. The few exceptions can be seen in these comparative rankings:

Comparative Rankings

Agency	Other Costs	Staff Years
FS	1	9
ASCS	2	2
SCS	3	1
OIRM	4	5
ARS	5	7
FmHA	6	4
OFM	7	3

The Forest Service, which plans to implement an extensive forest-level automated information system in a distributed processing environment, ranks first in the planned dollar expenditures but only ninth in the amount of staff years required to implement their IRM objectives. This may be due to the acquisitions of large quantities of equipment and telecommunications services needed to establish the distributed processing base, and requiring a relatively small number of staff years for implementation. This more likely indicates that the FS plans are currently focused on the hardware components, and that software development requirements will be factored into later plans.

The OFM ranks seventh in "other costs" and third in staff year requirements. The National Finance Center (NFC) requirements represent 100% of the resources declared by OFM in the FY 84 - 88 plan. This computer center services the entire Department in the area of Departmental financial and administrative systems. It depends on modern data processing equipment to function efficiently and effectively. But the current thrust of enhancing, redesigning, and programming Departmental automated management systems to improve service, Departmentwide, will require a large number of NFC staff years in software development efforts.

The ARS ranks fifth in "other costs" and seventh in planned staff years. ARS planned expenditures reflect efforts to improve their research capability through acquisitions of "state-of-the-art" office automation equipment and scientific-oriented microcomputers for their laboratories to be utilized in research projects.

The FmHA ranks sixth in "other costs" and fourth in planned staff years. FmHA planned expenditures are almost wholly attributable to the agencywide, field office automation project just getting underway.

Estimated Dollar Costs by Year. Exhibit 33 lists estimates of the IRM resource costs, other than staff years, for each agency and each of the five years, FY 84 - 88, covered by the current set of agency long-range IRM plans. The Departmentwide totals and five-year agency totals are included. This information provides some measure of the costs other than staffing associated with planned implementation of agency objectives in their long-range IRM plans.

FY 85 Analysis. This particular year was chosen for a more detailed analysis of agency plans and for a comparison of these plans with the ITS obligations shown earlier. In Exhibit 34, agency estimated staff years have been converted to staff dollars by using OBPA's average salaries for GS positions for each agency. Because of the highly technical nature of IRM technologies and, thus, implementation of most of the objectives, these average salaries are probably on the low side; also, top level management salaries have not been factored in. Thus, the staff costs are somewhat conservative. These converted staff costs when added to agency estimated "other" costs yield an estimated total cost for each agency plan for FY 85. Exhibit 35 compares the same estimated total costs associated with the long-range IRM plans with the FY 85 ITS obligations for each agency.

The table below lists the top seven of these agencies, ranked in order of their FY 85 ITS obligations. The same seven agencies also rank, in slightly different order, in the top seven based on total resource estimates as computed in Exhibit 34.

FY 85 ITS Adjusted Budget vs Long-Range IRM Plans

Agency	ITS Rank	IRM Plan Rank
FS	1	2
OFM	2	7
ASCS	3	1
FmHA	4	5
OIRM	5	4
ARS	6	6
SCS	7	3

Long-Range IRM Objectives

Collectively, agency long-range IRM plans for FY 84-88 contain over 300 long-range IRM objectives. Exhibit 36 lists 21 objectives that were selected from the total collection based on estimated costs in excess of \$5 million dollars over the five year period. These 21 objectives represent only 7% of all the objectives defined; but they will involve \$592 million in "other" costs and 3,267 staff years, or 87% and 32%,

respectively, of the total estimated resources of the entire family of long-range IRM plans.

The balance of the objectives (approximately 93% of the 300) account for 13% and 68% of "other costs" and staff resources, respectively. Thus, it is these "big" objectives that are the driving force behind the increases in the USDA FY 84 ITS budget noted earlier.

Information Technology Systems Obligations Governmentwide (\$000)

Agency	FY 83	FY 84	FY 85
HHS	1,226,308	1,486,114	1,518,045
NASA	660,480	735,805	796,603
Energy	657,704	743,355	876,152
Treasury	369,699	424,899	518,285
USDA	339,541	395,911	431,392
Veterans Admin.	264,812	345,918	319,713
Justice	236,715	386,556	389,345
Interior	201,848	254,980	267,152
Transportation	200,336	239,040	226,396
Commerce	124,402	129,204	123,002
GSA	107,287	119,483	132,007
Labor	94,340	104,744	108,322
EPA	65,106	71,434	81,318
HUD	46,828	54,502	60,161
OPM	21,726	31,262	32,297
Navy	1,276,153	1,486,831	1,851,814
Army	1,404,341	1,724,531	1,864,154
Air Force	1,815,104	2,087,763	2,626,610
Marines	114,953	139,586	153,892

NOTES: OMB, Department of Education, Department of State, and Postal Service figures are not available at this time.

Exhibit 1

ITS OBLIGATIONS
TOP FEDERAL NON DOD AGENCIES (FY83)

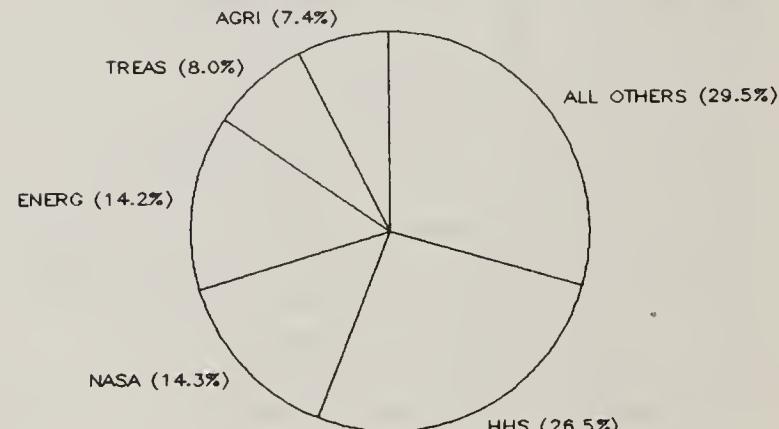


Exhibit 2

TOP FEDERAL NON DOD AGENCIES (FY84)

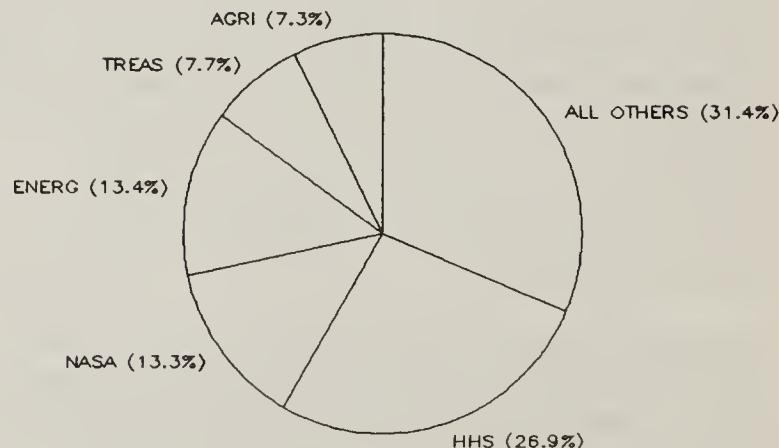


Exhibit 3

ITS OBLIGATIONS
TOP FEDERAL NON DOD AGENCIES (FY85)

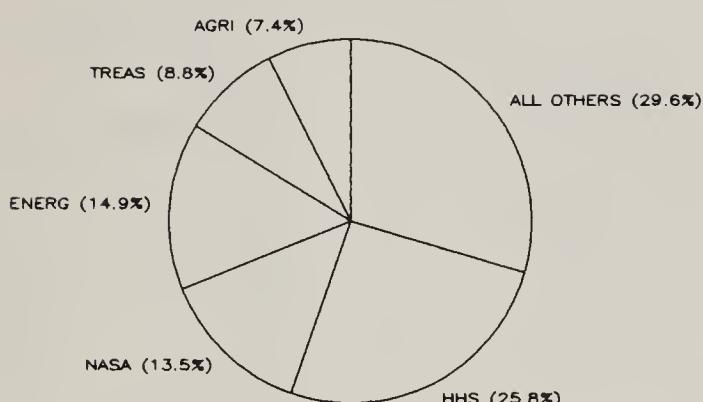
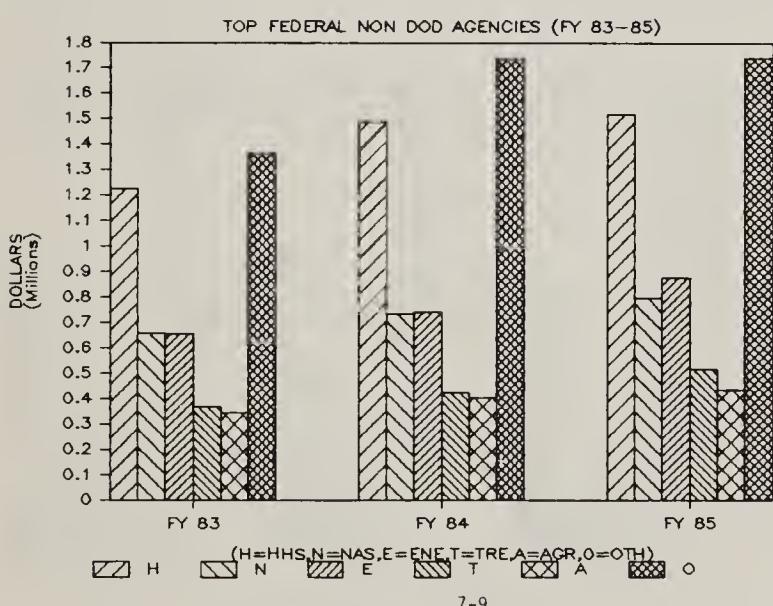


Exhibit 4



7-9

Exhibit 5

Information Technology Systems Obligations
USDAwide
(\$000)

Agency	FY 83	FY 84	FY 85
ACS	341	301	316
AMS	6,286	2,881	7,214
APHIS	11,168	17,400	17,514
ASCS	31,070	51,201	65,013
ARS	24,284	28,040	32,820
OB&PA	493	438	355
CSRS	475	647	726
OEO	98	88	75
ES	806	789	737
ERS	5,807	5,994	6,280
FmHa	35,856	32,459	52,415
FCIC	6,649	9,136	9,323
FGIS	2,033	2,230	2,700
OFM ²	138	115	115
FNS	9,502	10,411	10,219
FSIS	5,220	7,336	7,715
FAS	8,147	11,726	4,903
FS	147,399	157,765	154,144
OGPA	184	244	233
HNIS	1,195	941	823
OIRM ¹	6,147	6,679	8,474
OIG	3,763	5,084	5,737
OICD	125	101	115
NAL	1,865	2,281	2,310
OO	567	590	613
P&SA	306	419	378
OP	259	341	298
REA	1,174	1,902	2,120
SCS	14,757	23,561	23,000
SRS	13,181	14,566	14,457
WAOB	246	245	250
TOTALS	339,541	395,911	431,392

Notes:

1. Funds needed in addition to the following income - FY 83 (34,975); FY 84 (37,864); and FY 85 (42,715).
2. Funds needed in addition to the following income - FY 83 (102,072); FY 84 (113,840); and FY 85 (121,493).

Exhibit 6

ITS OBLIGATIONS
TOP FIVE USDA AGENCIES (FY 83)

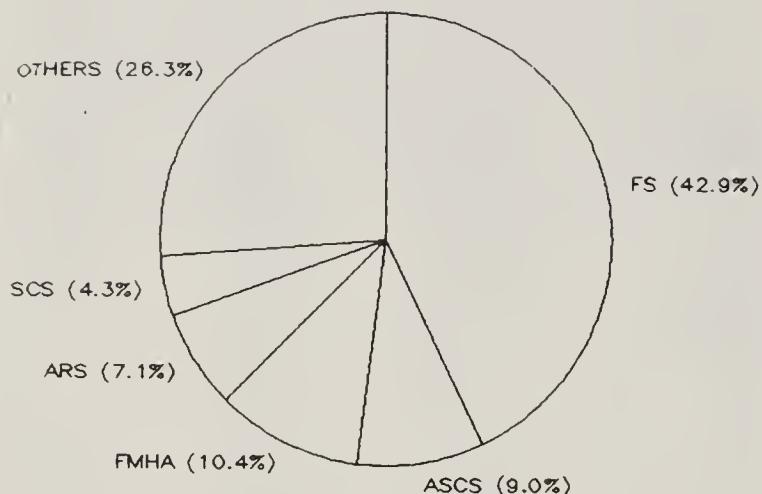


Exhibit 7

ITS OBLIGATIONS
TOP FIVE USDA AGENCIES (FY 85)

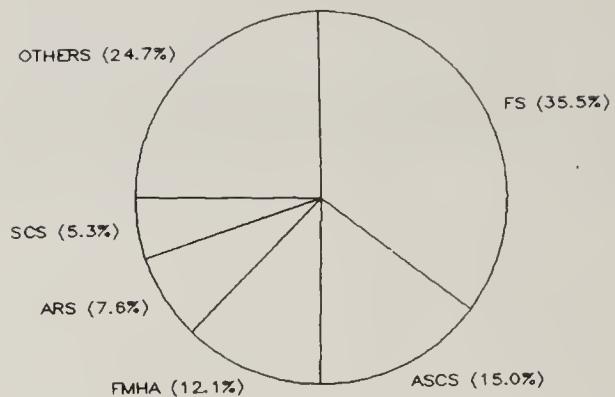


Exhibit 9

TOP FIVE USDA AGENCIES (FY 84)

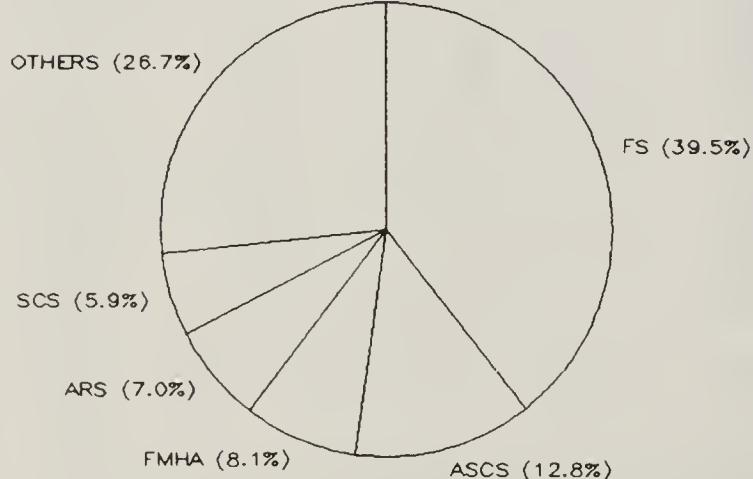


Exhibit 8

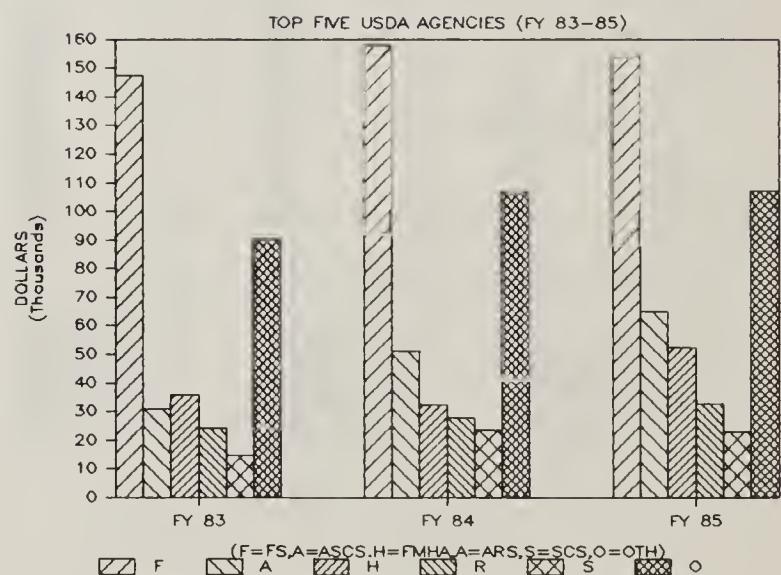


Exhibit 10

**Information Technology Systems Obligations
(FY85)**
Top USDA Agencies
(With WCF Adjustments for OIRM & OFM)

Agency	FY 85 (\$000)	Percent of USDA ITS Dollars
FS	154,144	35
OFM	121,608 ¹	28
ASCS	65,013	15
FmHA	52,415	12
OIRM	51,189 ²	2
ARS	32,820	8
SCS	23,000	5
APHIS	17,514	4
SRS	14,457	3
FNS	10,219	2
FCIC	9,323	2
FSIS	7,715	2
AMS	7,214	2
ERS	6,280	1
OIG	5,737	1

NOTES:

1. 99.9%]of this amount is the anticipated operating budget/revenue of the NFC.
2. Included is an anticipated offsetting income from services rendered of \$42,715,000.
3. Because of WCF adjustments, the total % is greater than 100%.

Exhibit 11

ITS OBLIGATIONS
CAPITAL INVESTMENTS (FY 83)

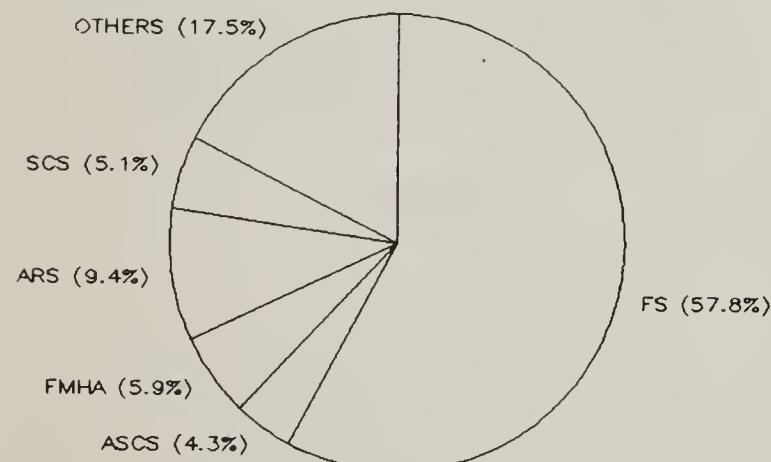


Exhibit 12

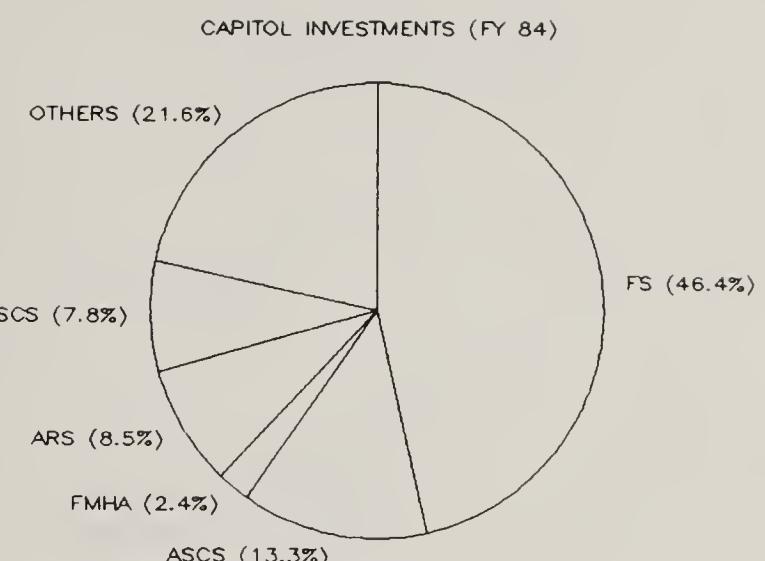


Exhibit 13

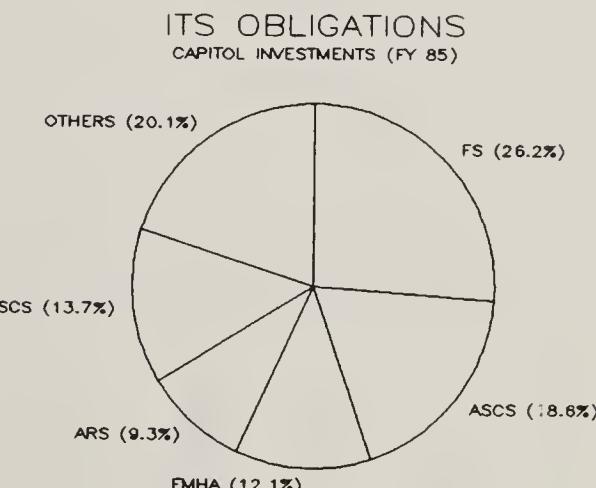


Exhibit 14

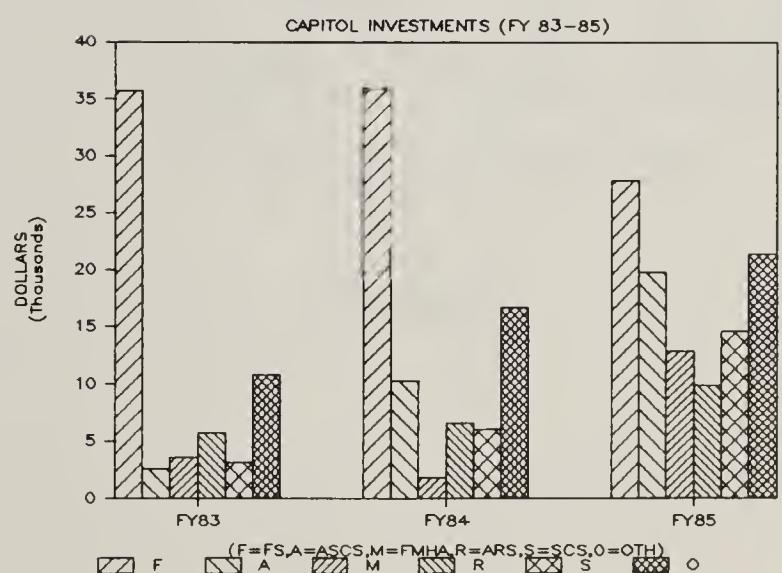
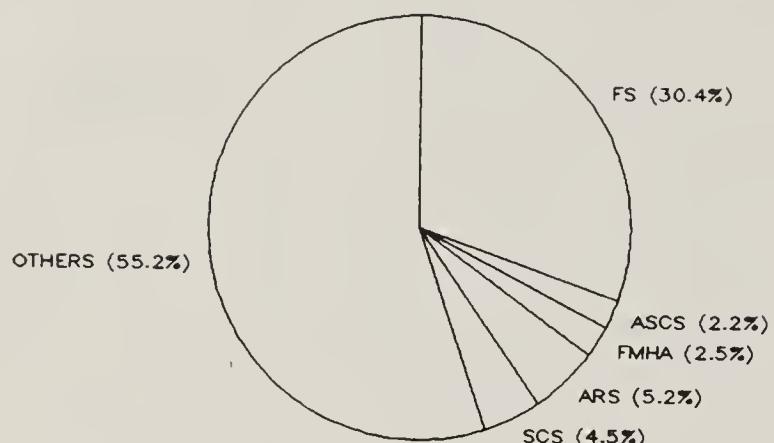


Exhibit 15

ITS OBLIGATIONS
EQPT RENTL & OPERG COST (FY 83)



USDA LR IRM PLAN
EQPT RENTL & OPERG COST (FY 85)

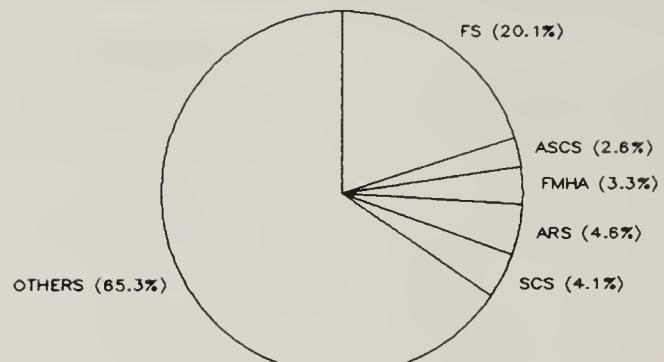


Exhibit 18

Exhibit 16

EQPT RENTL & OPERG COST (FY 84)

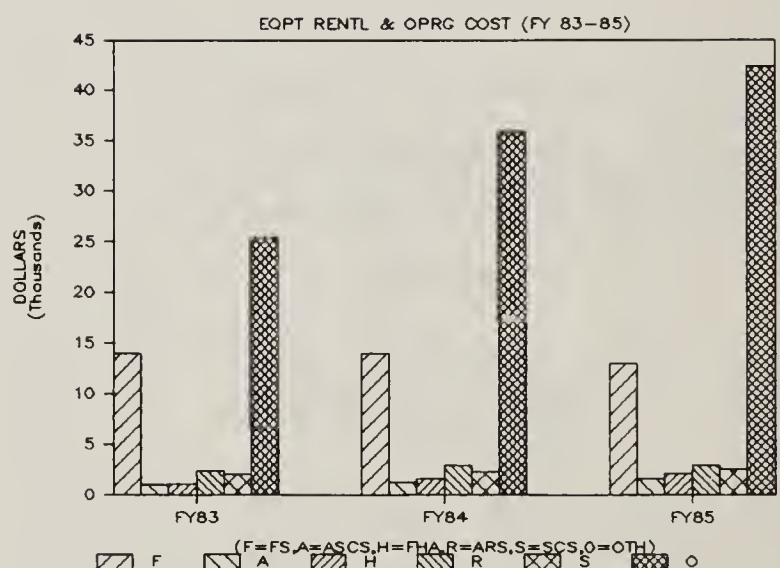
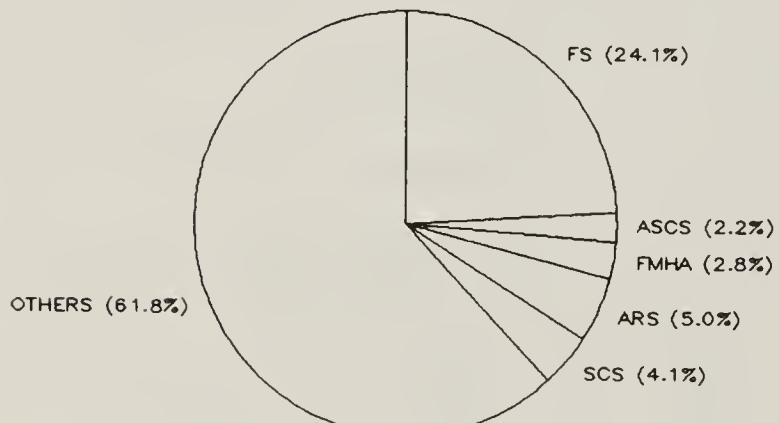


Exhibit 17

Exhibit 19

ITS OBLIGATIONS
PERSONNEL (FY 83)

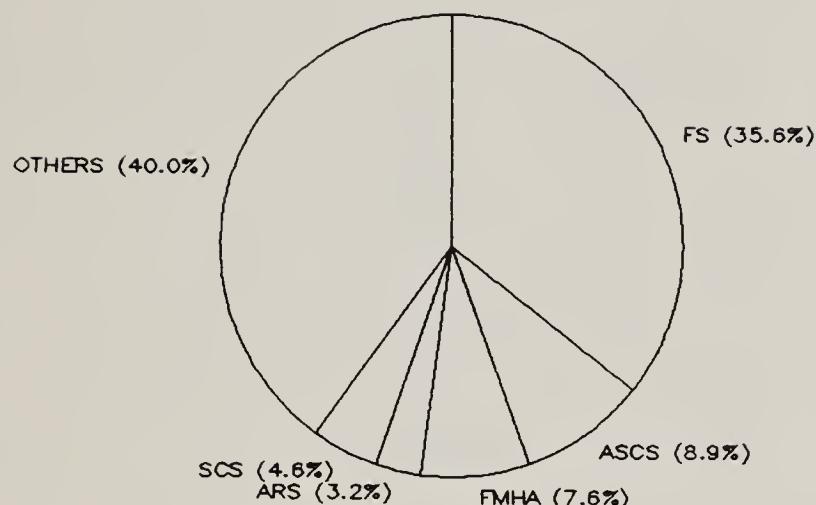


Exhibit 20

ITS OBLIGATIONS
PERSONNEL (FY 85)

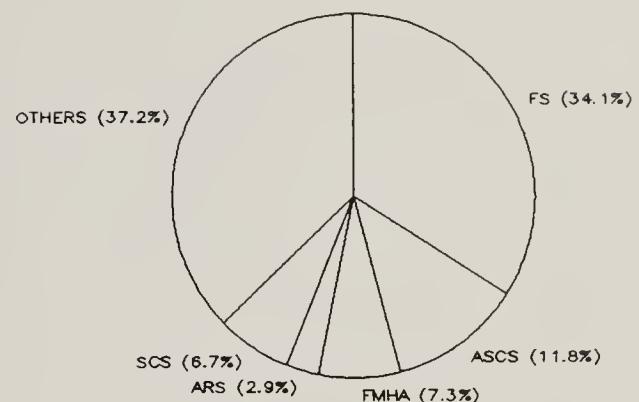


Exhibit 22

PERSONNEL (FY 84)

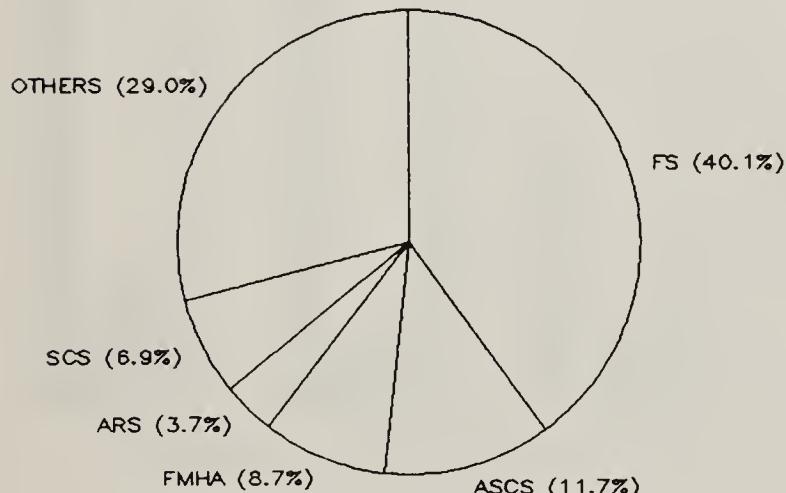


Exhibit 21

PERSONNEL (FY 83-85)

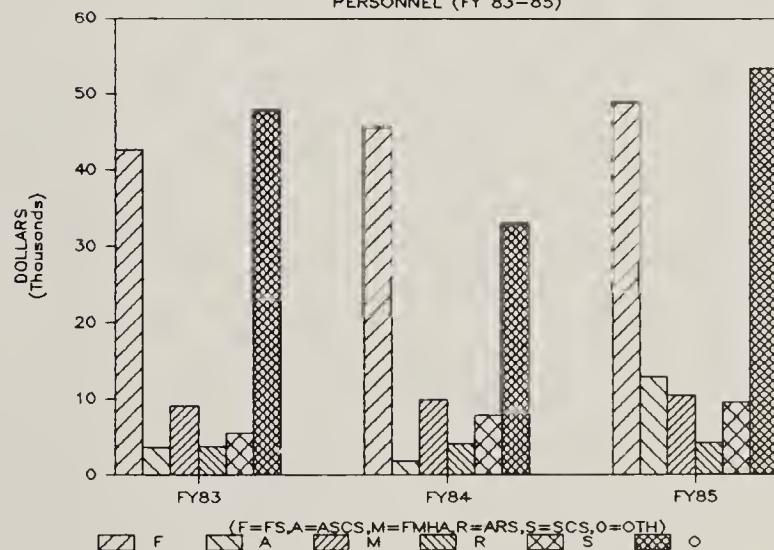


Exhibit 23

ITS OBLIGATIONS
COMMERCIAL SERVICES (FY 83)

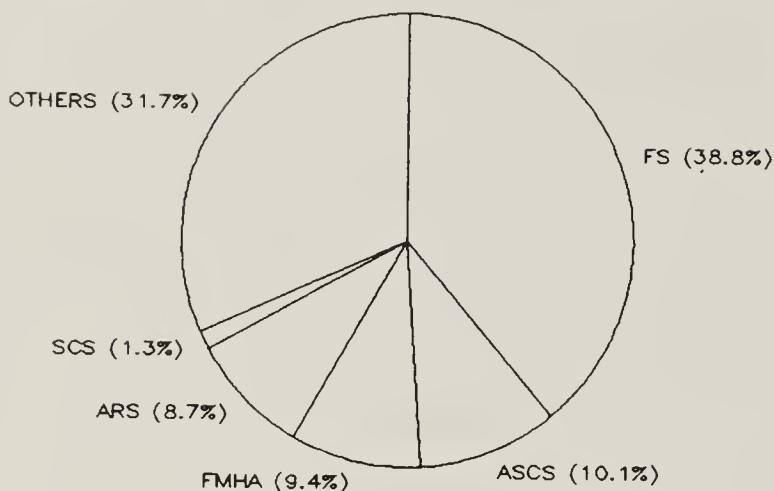


Exhibit 24

ITS OBLIGATIONS
COMMERCIAL SERVICES (FY 85)

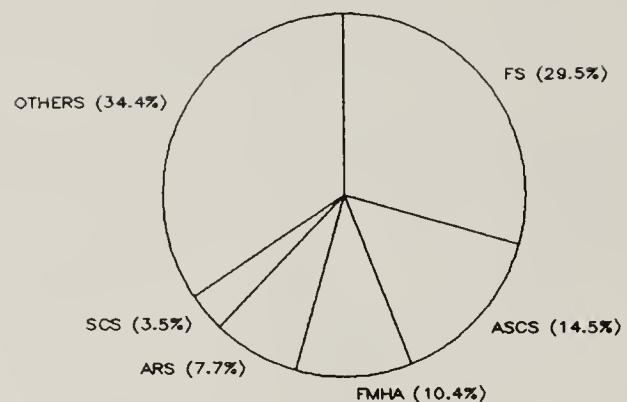


Exhibit 26

COMMERCIAL SERVICES (FY 84)

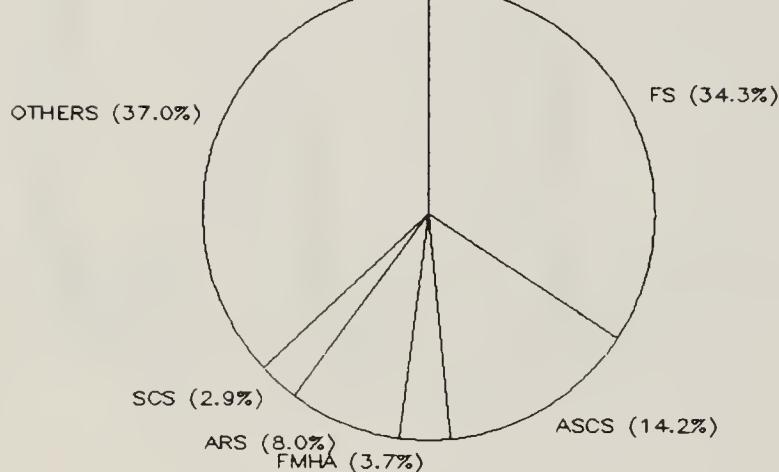


Exhibit 25

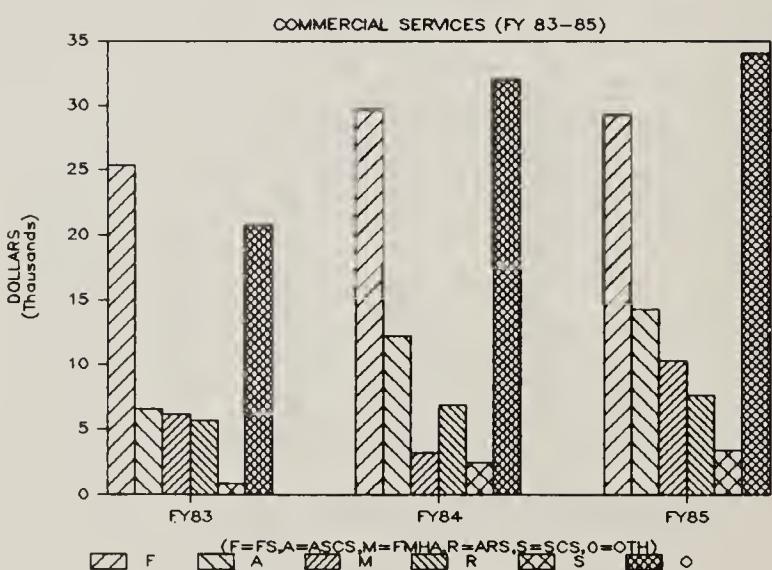


Exhibit 27

**Agency Long-Range IRM Plans
Five-Year Resource Requirements (FY 84 - 88)**

AGENCY	OTHER COSTS (\$000)	STAFF YEARS
ACS	26	2.4
AMS	10,668	210.5
APHIS	5,790	36.9
ARS	48,685	343.7
ASCS	170,805	2,682.6
CSRS	2,910	61.2
EMS	259	6.7
ERS2,254	136.5	
ES	1,940	53.0
FAS	5,364	142.2
FCIC	395	140.0
FGIS	305	7.2
FmHA	25,776	726.0
FNS	1,248	26.0
FS	241,762	207.0f
SIS*	-	-
HNIS	180	6.4
NAL	2,130	36.5
OFM	15,319	902.0
OBPA*	-	-
OEO	33	0.0
OGPA	360	67.2
OICD	1,065	14.4
OIG	12,124	406.6
OIRM	63,226	630.1
OO	0	19.3
OP	50	2.0
OSDBU	0	20.0
OT	20	1.0
PSA*	-	-
REA	476	43.2
SCS	64,475	3,255.0
SRS	3445	91.0
TOTALS	681,089	10,276.4

NOTE: *No resource requirements were supplied in these agency plans.

Exhibit 28

LR IRM PLAN/STAFF YEARS
TOP FIVE USDA AGENCIES (FY 84-88)

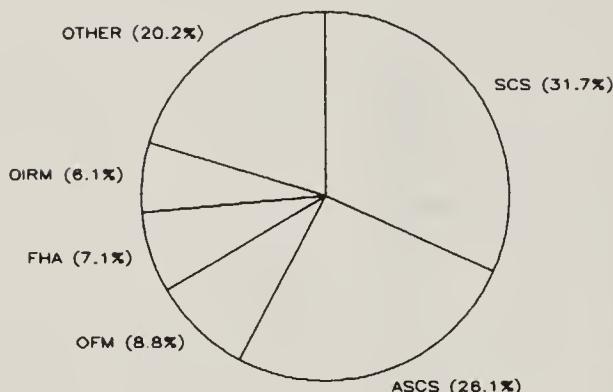


Exhibit 29

LR IRM PLAN/OTHER COSTS
TOP FIVE USDA AGENCIES (FY 84-88)

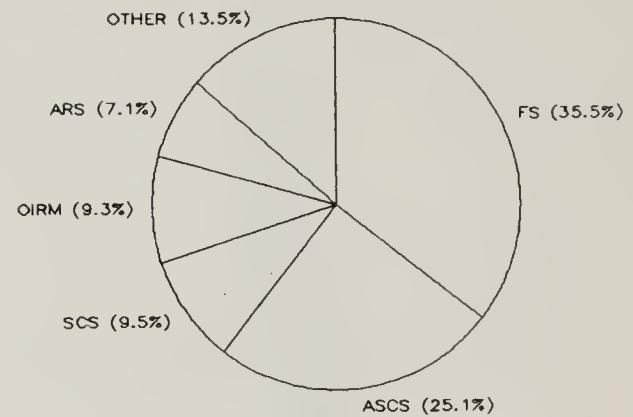


Exhibit 31

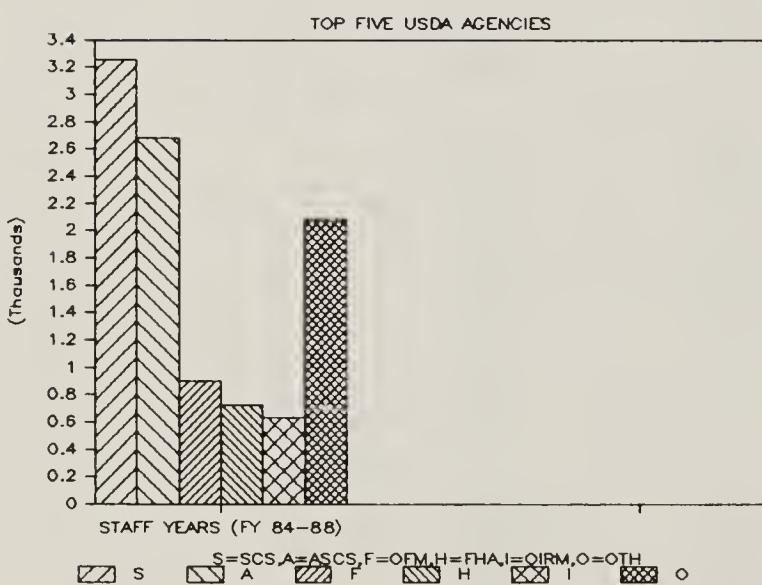


Exhibit 30

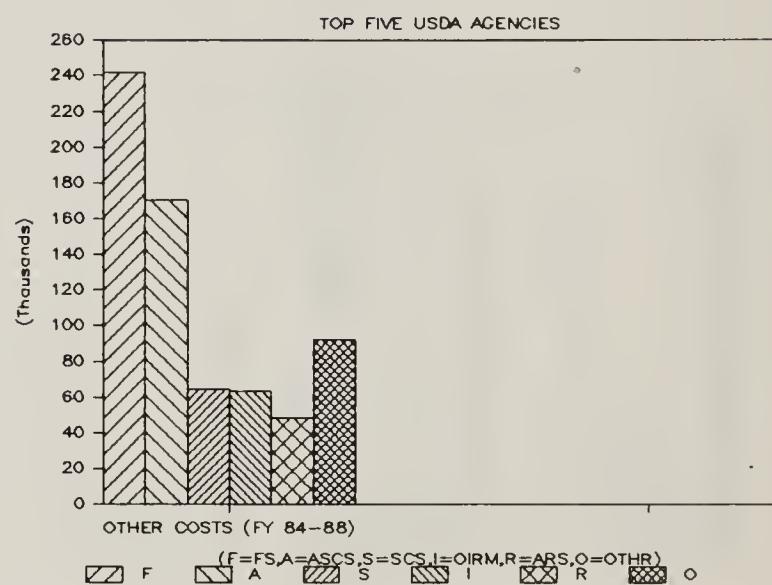


Exhibit 32

Agency Long-Range IRM Plans FY 84 - 88
Estimated Dollar Costs by FY
(Exclusive of Staff)
(\$000)

AGENCY	FY84	FY85	FY86	FY87	FY88	FIVE-YEAR TOTALS
ACS	7	7	4	4	4	26
AMS	1,601	1,843	2,278	2,368	2,578	10,668
APHIS	3,200	1,697	286	320	287	5,790
ARS	12,512	10,619	12,195	6,676	6,683	48,685
ASCS	14,399	40,609	60,389	42,449	12,959	170,805
CSRS	555	600	615	565	575	2,910
EMS	72	187	0	0	0	259
ERS	749	1,005	265	180	55	2,254
ES	325	400	375	420	420	1,940
FAS	1,739	1,712	1,127	602	185	5,364
FCIC	79	79	79	79	79	395
FGIS	305	0	0	0	0	305
FmHA	4,949	10,813	5,472	4,192	350	25,776
FNS	620	224	130	134	140	1,248
FS	47,130	47,851	61,337	42,704	42,740	24,1762
FSIS*	-	-	-	-	-	-
HNIS	125	45	10	0	0	180
NAL	390	440	570	365	365	2,130
OFM	2,107	2,932	3,306	3,392	3,582	15,319
OBPA*	-	-	-	-	-	-
OEO	33	0	0	0	0	33
OGPA	130	55	45	50	80	360
OCID	375	340	150	100	100	1,065
OIG	1,775	2,521	2,576	2,581	2,671	12,124
OIRM	4,167	15,964	32,312	5,670	5,113	63,226
OO*	-	-	-	-	-	-
OP	50	0	0	0	0	50
OSDBU*	-	-	-	-	-	-
OT	10	5	5	0	0	20
PSA*	-	-	-	-	-	-
REA	107	90	93	93	93	476
SCS	3,722	19,372	16,642	17,322	7,317	64,475
SRS	625	640	595	850	735	3,445
USDA TOTALS	101,858	160,050	200,856	131,116	87,111	681,089

NOTE: (*) No resource requirements for dollars costs were supplied by these agencies.

Exhibit 33

FY 85 Agency Long-Range IRM Plans¹
Totals & Staff Costs as % of Totals

Agency	Staff Years	Cost per Staff Yr ²	Staff Costs (\$000)	Other Costs (\$000)	Total Costs (\$000)	Staff Costs % of Total
ACS	0.7	33,210	23	7	30	77
AMS	40.0	25,361	1,014	1,843	2,857	36
APHIS	7.6	25,085	191	1,697	1,888	10
ARS	75.9	27,972	2,123	10,619	12,742	17
ASCS	901.6	27,328	24,639	40,609	65,248	38
CSRS	13.5	33,790	456	600	1,056	43
ERS	36.6	33,514	1,227	1,005	2,232	55
ES	9.5	31,832	302	400	702	43
FAS	33.0	27,078	894	1,712	2,606	34
FCIC	27.5	25,573	758	79	837	91
FGIS	0.1	24,308	2	0	2	100
FmHA	150.0	21,675	3,251	10,813	14,064	23
FNS	6.0	27,703	166	224	390	43
FS	45.0	20,060	903	47,851	48,754	2
HNIS	1.5	30,930	46	45	91	51
NAL	7.0	20,380	143	440	583	24
OFM	189.0	33,080	6,252	2,932	9,184	68
OGPA	12.1	26,238	317	55	372	85
OICD	3.9	29,898	117	340	457	26
OIG	73.1	31,605	2,310	2,521	4,831	48
OIRM	121.7	33,080	4,026	15,964	19,990	20
OO	4.2	33,080	139	0	139	100
REA	13.0	33,238	432	90	522	83
SCS	557.4	25,063	13,970	19,372	33,342	42
SRS	20.0	26,567	531	640	1,171	45

NOTE:

1. Agency plans showing no estimated staff resources are excluded from this list.
2. Agency average cost/staff year for GS positions as per OBPA.

Exhibit 34

FY 85 Agency Long-Range IRM Plans
 Compared to ITS Obligations

Agency	Plan Costs (\$000)	ITS Obligations (\$000)	Plan as % of ITS Obligations
ACS	30	316	10
AMS	2,857	7,214	40
APHIS	1,888	17,514	11
ARS	12,742	38,820	39
ASCS	65,248	65,013	100 ⁺
CSRS	1,056	726	145
ERS	2,232	6,280	36
ES	702	737	95
FAS	2,606	4,903	53
FCIC	837	9,323	9
FGIS	2	2,700	0 ⁺
FmHA	14,064	52,415	27
FNS	390	10,219	4
FS	48,754	154,144	32
FSIS ¹	-	7,715	0
HNIS	91	823	11
NAL	583	2,310	25
OBPA ¹	-	355	0
OEO ¹	-	75	0
OFM	9,184	121,608	8
OGPA	732	233	160
OICD	457	115	397
OIG	4,831	5,737	84
OIRM	19,990	51,189	39
OO	139	613	23
OP ¹	-	298	0
PSA ¹	-	378	0
REA	522	2,120	25
SCS	33,342	23,000	145
SRS	<u>1,171</u>	<u>14,457</u>	<u>8</u>
TOTALS	224,092	595,350	38

NOTE:

1. Plan showed no resource requirements.

Exhibit 35

Agency Long-Range IRM Objectives
In Excess of \$5 Million "Other" Costs

Agency	Objective ID	Subject Matter	Cost ¹ (\$000)	Staff Years
APHIS	06	Implement consolidate office systems support	5,697	10
ARS	01	Development of scientific ADP applications and activities	16,655	138
	02	Laboratory automation activities	9,385	20
	05	Modernization of ARS telecommunication facilities	9,949	14
ASCS	02	Install information processing technology in ASCS state and county offices	149,800	1,737
	03	Create joint ASCS, FAS information technology center	12,740	53
	08	Replace grain and processed commodities information systems	7,000	7
FHA	01	Convert loan program accounting systems to the KCCC	12,249	40
	03	Create new program accounting systems	6,375	349
FS	DP-1	Distributed processing	59,810	0
	DP-3	Software conversion and programming service	9,012	29
	T-2	Telecommunications facilities	165,000	115
OFM	GS-03	Obtain state-of-the-art equipment software	12,373	65
OIG	01	Office automation	6,900	30
OIRM	OTD-1	Telecommunication for the WMA	22,600	38
	FCCC-04	5-years ADP equipment procurement	24,730	95
	WCCC-04	Cost effective and reliable DCS	6,983	32
SCS	SW-01	Provide needed software in SCS	6,050	445

Exhibit 36

Agency Long-Range IRM Objectives—Continued
In Excess of \$5 Million "Other" Costs

Agency	Objective ID	Subject Matter	Cost ¹ (\$000)	Staff Years
	HW-01	End-user processing capability	28,250	13
	HW-02	Acquire integrated hardware	12,880	25
	TC-01	SCS telecommunications network	<u>7,900</u>	<u>13</u>
Total			592,338	3,268
Percent of Total for All USDA Agency Plans			87%	32%

NOTE: (1) The cost of staff years is not included in the COST column.

Exhibit 36—Continued



R0000 541412



R0000 541412